OHIO STATE UNIVERSITY
MAR 10 1930
LIBRARY

FIRE ENGINEERING

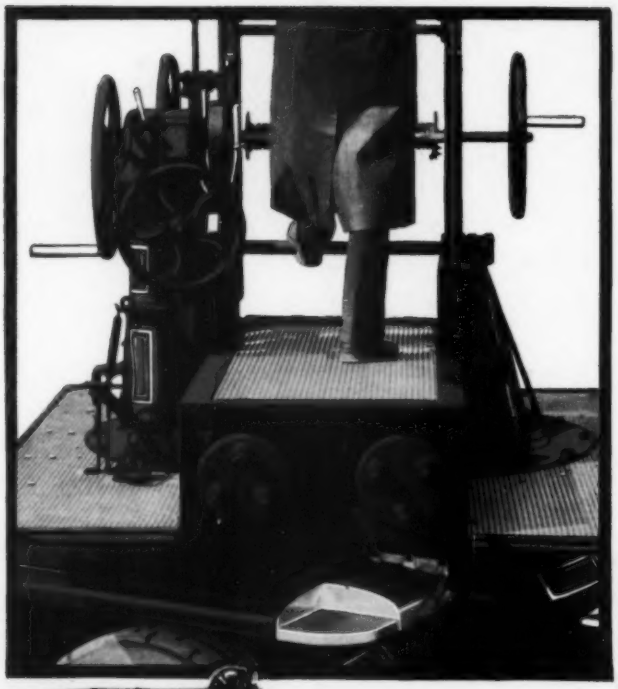
A consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

The Journal of the Fire Protection Profession

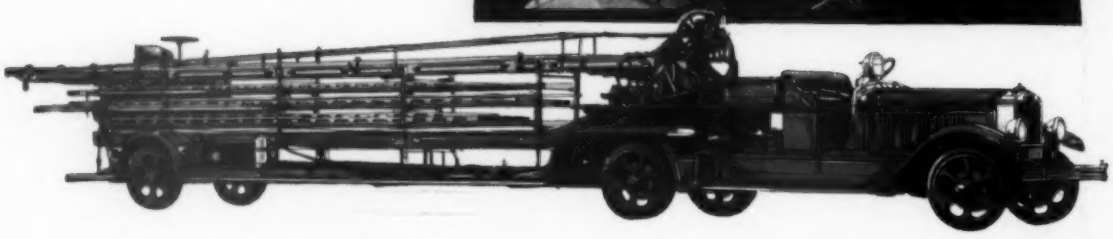
MARCH 5, 1930

EUREKA
FIRE HOSE
A few cents per foot is the difference between speculation and investment in Fire Protection!
Eureka Fire Hose Manufacturing Company
50 CHURCH STREET, NEW YORK CITY
ATLANTA BOSTON CHICAGO COLUMBUS DALLAS DENVER DES MOINES DETROIT
KANSAS CITY LOS ANGELES MINNEAPOLIS NEW YORK PHILADELPHIA SEATTLE SYRACUSE

ESTABLISHED 1877 PUBLISHED BI-WEEKLY



CLEAR CONTROL PLATFORM



. . . a feature of the new MASTER SERIES AERIAL

There's no hurdling or climbing to reach the ladder on the new Master Series American-LaFrance Aerial.

The control platform is *clear*. No shafts, housings, or gears obstruct the way to the ladder.

A clear approach to the ladder means safety, especially during wet or icy weather. It means a saving in time, when every second is important.

The new Master Series Aerial is the result of many years' study of fire department needs. One man control...pressed steel heat-treated frame...left hand drive...four wheel brakes... low, wide running boards...the highest standard materials that combine strength with lightness... study its features one by one and you will see that here is the finest aerial ever built.

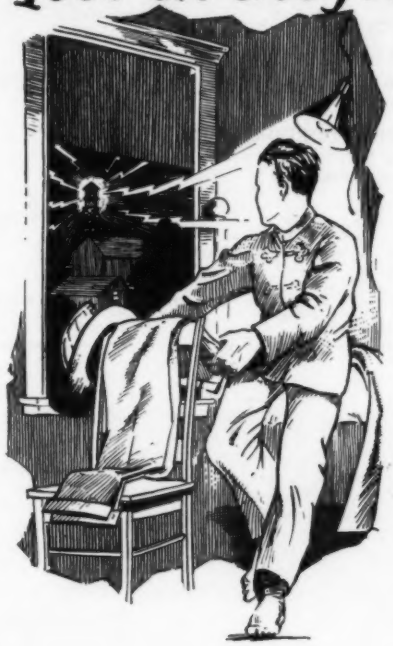
For complete information on the new Master Series Aerial, or on Master Series Pumpers or City Service Trucks, write American-LaFrance and Foamite Corporation, Dept. A-54, Elmira, N.Y. ***Offices in all principal cities.***

LA FRANCE AND FOAMITE PROTECTION

AN ENGINEERING SERVICE

AGAINST FIRE

Feet on the floor on the first Blast!



RIGHT out of the Blankets—"Feet on the floor at the first blast!—that's the kind of action we get from our firemen since we installed our Fedelcode," writes one Fire Chief.

Faster turn-out of men and more men at the fire, such is the common experience of cities that have selected the Fedelcode to guard lives and property.

More sound per horsepower, is one outstanding feature of Fedelcode Sirens as proven in competitive tests. Here are the most powerful electric sirens ever built.

Years of siren building experience and development have produced the present vertical type Fedelcode Sirens. Actual user tests under most severe weather conditions prove the Fedelcode to be weatherproof, and operative at all times.

Your city, too, will find it pays to have a Fedelcode Siren on guard. Built in four sizes—let us know how far you want a Siren to be heard. Just address

FEDERAL ELECTRIC COMPANY

8700 South State Street **Chicago, Illinois**

Gentlemen:

We would like our Siren to be heard..... miles. The current supply is..... volts..... phase ..... cycle.

Name .....

City..... State.....

F. E.

The Journal of the Fire Protection Profession Since 1877

MEMBER
Audit Bureau of Circulations
Assoc. Business Papers, Inc.

FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

Published Every Other Wednesday

SUBSCRIPTION PRICE
U. S. and Canada $3 a year; Foreign $4; Single copies 25c

Issued by CASE-SHEPPERD-MANN PUBLISHING CORPORATION
225 West 34th Street, New York City
Also publishers of "Water Works Engineering," Technical Books, etc.

KARL M. MANN
President and Advertising Director

FRED SHEPPERD
Managing Editor

I. HERBERT CASE
Vice-Pres. and General Manager

H. S. ESSEX, Advertising Manager; ROBERT H. LOCKWOOD, Editor; N. N. WOLPERT, Asst. Editor
HAROLD T. MURRAY, Vice-Pres. and Western Manager, 30 N. Michigan Ave., Chicago, Ill. Telephone Franklin 0128

EDITORIAL ADVISORY BOARD

JOHN KENLON
Chief, New York Fire Dept.
Founder of New York Fire College

JOHN C. MORAN
Chief, Fire Department
Hartford, Conn.

GEO. J. KUSS
Former Deputy Chief N. Y. F. D.;
Lecturer on Fire Fighting, Delehanty Institute, N. Y.

A. A. BELL
Chief of Fire Brigades and Engineer "America Fore" Group of Fire Insurance Cos.

We Feel Honored

¶ It will interest our many readers to know that the newly established permanent headquarters office of the International Association of Fire Chiefs is now definitely located in conjunction with the offices of FIRE ENGINEERING. In other words, we're right side by side, even closer than neighbors.

¶ What's more, the Association office is being conducted under the general supervision of none other than Fred Shepperd, our own Editorial Director. Mr. Shepperd, too, has been appointed Chairman of the I. A. F. C. Educational Committee, which gives him the important task of laying out the vast fire school program to be undertaken by the Association. "I know of no man in the whole world more capable of doing the work," said President Ralph Scott in announcing the appointment. Another member of the FIRE ENGINEERING staff, I. H. Case, is acting as the Association's Publicity Manager.

¶ It was our good old friend Teddy Roosevelt who once remarked, and rightfully so: "Every man owes a part of his time to the upbuilding of the profession to which he belongs." We are always glad to do our bit in any cause helpful to the fire profession. With us it is a labor of love.

The Publishers

P.S.—This is one column Mr. Shepperd does not write. He's too modest.

CONTENTS

VOL. LXXXIII No. 5

MARCH 5, 1930

Trans-Atlantic Ship Sinks at New York Pier from Series of Explosions, by Wm. Jerome Daly (Illustrated) 185
Five Explosions Felt and One Blast Causes Death of Pilot on Fireboat Thomas Willett.

Celluloid Fires—A Growing Hazard (Illustrated) 187
Newly Developed Uses Continually Adding to Possibilities of Fires in this Material.

What Are the Uses and Value of the Quadruple Combination? by J. Colton 189
Special Cases Where Apparatus Has Advantages.

The Round Table 191
How Do You Handle Telephone or Still Alarms? Also, How Do You Handle Alarms Received From Central Stations?

With the Editor 193
Comments on Current Events and Live Topics by Our Editorial Staff.

Questions and Answers 195
Replies to Questions on All Manner of Subjects of Fire Fighting and Fire Prevention.

Recent Important Fires Specially Reported (Illustrated) 197
Fire in Truck Shops of Boston Elevated Railway—Burnings of Two Weeks.

Fire Department Activities 207
Newsy Notes from All Over the Country with Matters Firemanic.

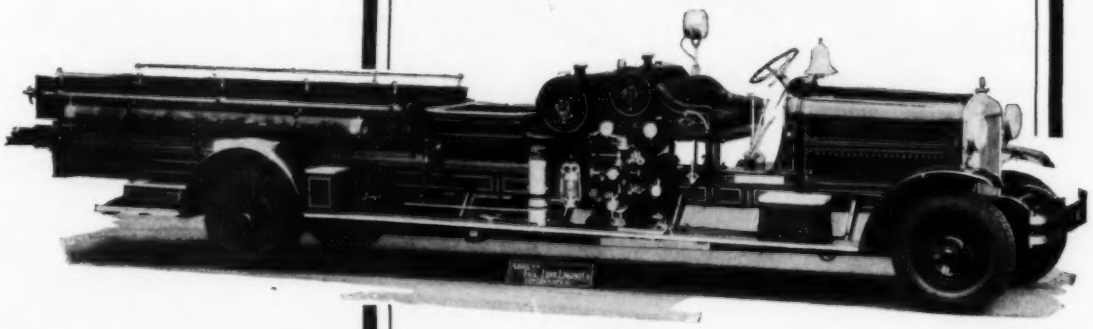
Fire Department Improvements 208
Record of Business Activities in the Fire Protection Field.

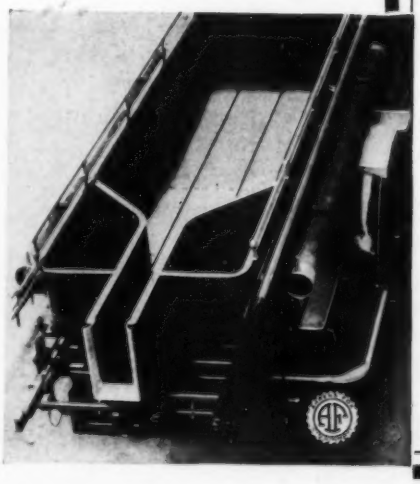
False Alarms 212
The Humorous Side of the Fire Protection Profession.

Contents of this issue copyrighted, 1930, by the Case-Shepperd-Mann Publishing Corp., 225 W. 34th St., New York City.
Entered as second class matter April 15, 1929, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

THE "SKIRMISHER"

A Complete Fire Fighting Unit





The Ideal Apparatus for SMALL TOWNS and OUTLYING SECTIONS of Large Cities

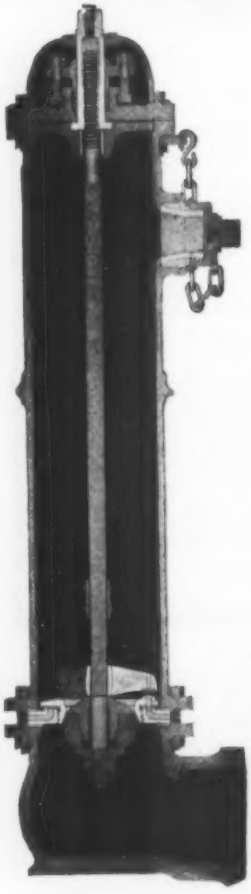
Pumper — Hose Carrier
Booster — Ladder Truck

THE AHRENS-FOX "SKIRMISHER" UNITS are the correct solution of the "Four-In-One" problem. The "Skirmisher" is a new departure in apparatus which is self-contained and complete with the necessary equipment.

Combining essential features in a more sensible manner. A unique arrangement of things indispensable.

THE AHRENS-FOX FIRE ENGINE COMPANY

CINCINNATI, OHIO



TAGGED

The fire engines—eager to go—
The great pumps at the waterworks—thumping and hissing as they force water into the mains—An alarm!—
In no time the apparatus reaches the hydrant — standing but a few feet from the supply of water in the mains.
Then — a balky hydrant —
And the few feet separation are as big as so many miles.
Both apparatus and water are useless —
Darling Hydrants are giving perfect satisfaction in an ever increasing number of towns and cities. They are built to best meet present day requirements.
Our catalog gives full details of construction.

DARLING VALVE & MFG. COMPANY
Williamsport, Pa.

New York Chicago Oklahoma City Houston

DARLING
FIRE HYDRANTS

752

Mack FIRE APPARATUS

MORE THAN 257 CITIES NOW USE MACK FIRE APPARATUS

Types of Mack Fire-Fighting Equipment

Hose wagons
Chemical engines
Combination hose and chemical
Pumpers
Triple combinations—pump, hose, booster (chemical)
City service hook and ladder trucks
Quadruple combinations—pump, ladders, hose, booster (chemical)
Tractors
Tractor-drawn aerial hook and ladder trucks
Squad cars

3 PROGRESSIVE CITIES RECEIVE MODERN MACK AERIAL LADDER TRUCKS WITH POWER HOISTS . . .

East, South and West, the preference grows for the new Mack Tractor-Drawn Aerial Ladder and Engine-Driven Power Hoist. Lewiston, Me., Louisville, Ky., and Seattle, Wash., have just added this up-to-date unit to their fire-fighting equipment. Its advantages of better accessibility to the tall buildings of today—one-man control—and greater safety, flexibility and dependability appeal to forward-looking fire department officials. The Engine-Driven Power Hoist which operates the ladder is the most revolutionary development in fire apparatus construction in years—originated and built exclusively by Mack.

Fire Engine Division
25 Broadway
New York, N. Y.

Mack

More than 100 direct Mack Factory Branches are equipped to service Mack Fire Apparatus in any emergency.

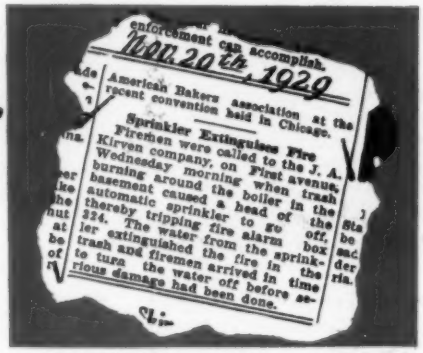
TRUCKS • BUSES • FIRE APPARATUS • LOCOMOTIVES

Kindly mention FIRE ENGINEERING *when writing advertisers.*

GAMEWELL

Sprinkler Watchman PREVENTS *Serious Water Damage* at COLUMBUS, GEORGIA

"SPRINKLER WATCHMAN"
(*Master Fire Alarm Box*)



enforcement can accomplish.

Nov. 20th, 1929

American Bakers association at the recent convention held in Chicago.

Sprinkler Extinguishes Fire

Firemen were called to the J. A. Kirven company, on First avenue, Wednesday morning when trash burning around the boiler in the basement caused a head of the automatic sprinkler to go off, thereby tripping fire alarm box 324. The water from the sprinkler extinguished the fire in the trash and firemen arrived in time to turn the water off before serious damage had been done.

COLUMBUS (GA.) LEDGER
November 20, 1929

SEVEN Gamewell *"Sprinkler Watchmen"* are in service at Columbus, Georgia; the first one being installed there 8 years ago. According to Mr. T. F. Tillman, Supt. of Fire Alarm, each of the concerns that installed a *"Sprinkler Watchman"* was allowed a reduction in its insurance rate, dependent upon the class of risk. This rate reduction was possible because of the satisfactory manner in which the *"Sprinkler Watchman"* reduces the fire and water hazard, by automatically transmitting an alarm to the fire department whenever a sprinkler head goes off. Otherwise, it would be necessary to wait until a passerby discovered the fire.

The *"Sprinkler Watchmen"* (Gamewell *Master* Fire Alarm Boxes) at Columbus are connected right into the regular box circuits. The maintenance expense amounts to practically nothing. Mr. Tillman states: "Each *'Sprinkler Watchman'* should be tested once each month. However, we have not had occasion to do maintenance work on any of the boxes since installation."

Every fire department, equipped with a modern alarm system, is in a position to offer this service to the owners of sprinkler protected property. To the business houses and institutions it means a safeguard against fire and water loss. To the municipality it is a safeguard for the city treasury, by preventing losses of taxable property.

Write for descriptive literature on the *"Sprinkler Watchman."* One of our Sales Engineers will call if you desire.

THE GAMEWELL COMPANY

Newton Upper Falls, Mass.

"A Box A Block"

FIRE ENGINEERING

(A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER)

The Journal of the Fire Protection Profession

VOLUME LXXXIII MARCH 5, 1930 NUMBER 5

Trans-Atlantic Ship Sinks at New York Pier From Series of Explosions

Cause of Fire Unknown—Five Explosions Felt and One Blast Responsible for Death of Pilot on Fireboat Thomas Willett

By WILLIAM JEROME DALY

FIRE aboard the trans-Atlantic steamship "Muenchen" of the North German Lloyd line in the forenoon of Tuesday, February 11, from a cause as yet not definitely determined, and resulting in the loss of two lives and probably the total loss of the ship, is still the subject of several separate inquiries and the talk of the maritime world.

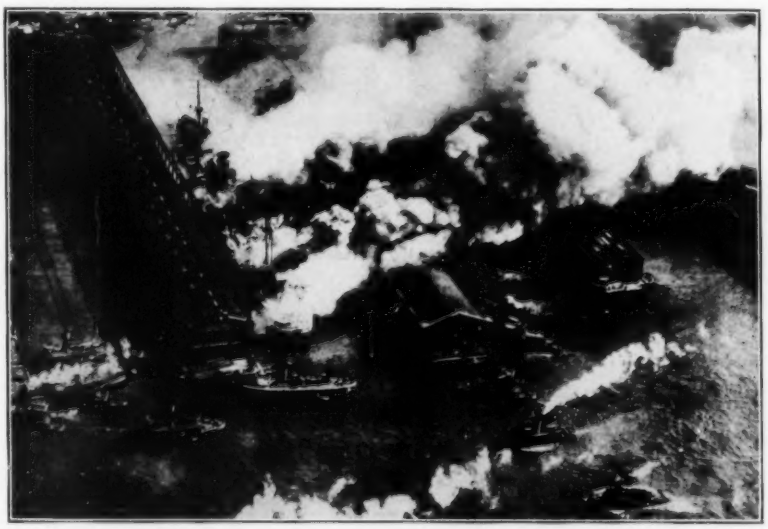
At this writing the vessel is still partially submerged on the southerly side of Pier No. 42, foot of Morton street, Hudson River, while divers are laboring inside the hull in effort to find a plan to not only clear the ship of her ruined cargo, but more particularly to decide on how and when she can be pumped out and raised.

The fire was one of the worst marine engagements that the New York department ever tackled. That the loss of life is not greater, in view of the explosions that occurred while fire fighters were making efforts to extinguish the blaze in her cargo, can be attributed only to Divine Providence. As it happened only a few men were hurt.

The "Muenchen," built in Germany in 1922, is 526 feet in length, 65 feet beam, 34.7 feet deep, of 13,483 gross tons, with a displacement of 25,000 tons, capable of making 15½ knots an hour. Her cost was $4,000,000 and she is insured in German companies for $1,500,000, which does not nearly cover the estimated loss. She arrived in New York Harbor on the night of Monday, February 10. At 3 a. m., February 11, while at anchor in the lower bay, 1,757 sacks of mail were lifted from Hold No. 6.

She was cleared by the port authorities about breakfast time and docked at about 9:30 o'clock in the morning, discharging 267 passengers, about eighty of whom in the third class had not completely passed the customs officials at the time that fire was discovered in Hold No. 6.

Stevedores immediately went to work on her cargo in all the hatches. Hold No. 6, according to the ship's manifest, contained the following: 234 bales of peat moss, 386 rolls of newsprint, 499 bags of nitrate of potash, 40 bags of shellac, 246 ingots of aluminum, and 37 tons general cargo.



An Aerial View of the German Liner Muenchen Burning at Her Hudson River Pier

Flames Discovered

About half the potash and most of the shellac had been removed during the one and a half hours that intervened when smoke was seen to issue from parts of the cargo in Hold No. 6 by laborers engaged in unloading her. These men testified that they saw a sputtering around the bags of potash and with other bags which they picked up they tried tc crush the flames or smother them. Three small fire lines of the ship's plant were run and the workmen endeavored to do their best — the smoke driving them off — until finally they retreated out of the hatchway. There is discrepancy as to whether or not the public fire alarm was immediately sounded. Some witnesses say it was; others that the workmen fought the fire for ten or fifteen minutes before the alarm was given. At all events, a special signal for that particular pier was received by the Fire Department at 11:15 a. m.

The Alarm Sounded

This special signal brought a full assignment of four land companies, two ladder companies, two fireboats, rescue company, two battalion chiefs, and the deputy chief of the marine division, who although not assigned, responded by automobile from a nearby fireboat station. This special signal was followed in one minute by the street box at West and Morton. Twelve minutes later a second alarm was sounded, while fireboat lines and high pressure lines from West street were being put to work under the direction of Deputy Chief John J. McElligott of the fireboat fleet, Deputy Chief John J. T. Waldron of the 2nd Division and Battalion Chiefs

Gebhardt and Rossbach arriving in the order given. Being a ship fire, it was McElligott's task and he immediately procured a copy of the cargo plan and went below. While reconnoitering in the area around Hold No. 6 three explosions were felt throughout the ship.

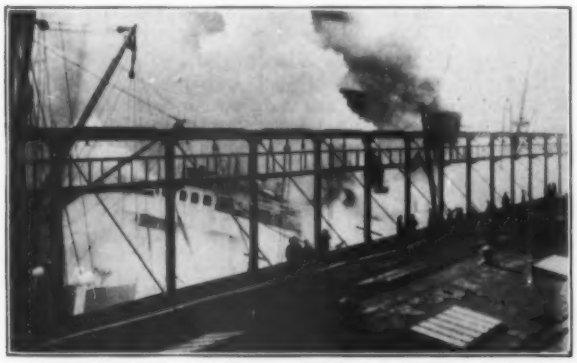
Three Explosions in Hold No. 6

These explosions occurred in Hold No. 6 where heavy streams were then working down the hatchway. The blasts were faint in comparison to those that followed, but they were enough to justify a third alarm twelve minutes after the second, and McElligott came up on deck, as nothing could be accomplished below, where the situation was becoming precarious.

There seemed nothing else to do but to flood Hold No. 6 as fast and as voluminously as possible. This was being done with a vengeance because the fire seemed to be greater in volume every minute and the smoke was dense and acrid. Suddenly there was another explosion—the fourth—and while it threw hose lines and parts of cargo skyward, it was really a blessing in disguise. While firemen were recovering their lines, as well as their senses, and were about to reestablish their positions at the rims of the hatchway, explosion No. 5 occurred within a half minute. It seemed as if all Hell itself had broken loose. The discipline exhibited by members of the Fire Department as well as members of the ship's crew was exemplary.

The Vessel Starts to Sink

Chief McElligott ordered all hands ashore. There was no time lost in retreating. Some firemen went to the taff rail and doffed their boots, rubber coats and helmets pre-



New York Firemen Working from the Roof of the Dock

paratory to taking a dive into the river, as the shortest way out, but in view of what happened to the fireboat Willett the river was not the safest place. McElligott ordered the ship cut adrift, that she might not become a menace to the old wooden pier and to hundreds of tons of cargo on the pier. But before this could be accomplished, the vessel had ripped open below the water line.

Additional hose lines were immediately stretched to cover the entire ship as well as the piers adjoining, as the fire belched its unhampered way forward, engulfing everything ahead on the A, B and C decks, extending to cabins, staterooms, salon, etc. The fourth and fifth alarm companies were now coming in—the alarms having been ordered by Assistant Chief of Department Joseph B. Martin. The forces consisted of 27 engines, 6 hook and ladder trucks, 3 fireboats (one disabled), a water tower, department ambulance, rescue company and gasoline-oil truck.

The weather was clear and crisp, temperature 27 degrees, wind from the northwest, which helped to save the wooden pier, the skylights of which were recked by falling debris, pig aluminum, fragments of newsprint, parts of the ship's rigging, etc.

Exactly what the big explosion did will not be accurately known until the vessel is raised and closer examination made. All the hatches that are ordinarily closed and barricaded while at sea, were open to facilitate speed in unloading. It is small wonder that the fire, given added impetus by the explosions, went merrily onward for hours to places and parts that could not be reached with hose streams from disadvantageous points ashore. To have put firemen aboard the ship under conditions that developed throughout the day would have been suicidal.

What Happened to the Fireboat

The death of Pilot John J. Harvey of the fireboat "Thomas Willett" and the injuries to Lieut. Harold Duryea and his comrades of the "Willett" were keenly felt by members of the department. The "Willett" was moored with one hawser to the starboard quarter of the "Muenchen" and several hose lines from the fireboat were over the "Muenchen's gunwhale. Fireman Lawrence S. Gilliam, a former diver in the U. S. Navy, had just reached the platform of the fighting-topmast of the fireboat and was pointing the nozzle of the gun toward the deck of the "Muenchen" when the explosion occurred.

The water under the "Willett" opened up and she went down into space and partially over. Gilliam was shot like a human projectile to the gabled roof of Pier No. 41 to the south, where he rolled back and down to the deck of a tugboat. What happened to Harvey will never be known. He was on deck helping to stretch lines when the blow came. He was next seen floating in the water, his head and face covered with blood. A railroad tug-boatman reached out to him with a long boat hook, but he sank before the hook could grip any part of his clothing. His body was recovered three hours later and his head injury indicated that he was struck by some heavy object. The deck of the "Willett" was awash and she shipped considerable water into her engine and boiler rooms, but she righted herself, and the only persons then aboard of her out of a crew of twelve were the two engineers and the two stokers—the others were catapulted into the river and picked up. Lieut. Duryea sustained a broken arm. Others were less seriously hurt. The fireboat was helpless, her forward hose reel, weighing a ton, had been lifted off its pedestal and lost in the river. The hosereel aft was torn from its tracks and rested over on its side against the boat's rail, while the lifeboat was cracked like an egg-shell. Sheets of heavy metal were strewn on the fireboat like giant shrapnel. A railroad tug took her in tow and out of further danger.

An electrician member of the crew of the "Meunchen" is missing. He may have perished at his post of duty.

Ship Rests Near Rapid Transit Tunnel

While the fire was raging and soon after the ship had settled into her cradle of mud, officials of the Hudson & Manhattan Railroad, a rapid transit line plying between New York and Newark, N. J., via tubes under the Hudson River, came to Fire Commissioner John J. Dorman at the scene of the fire and informed him that the tube from Morton street to Jersey City was directly beneath the burning ship.

Commissioner Dorman called Deputy Chief McElligott into consultation and the latter inquired as to the exact location of the rapid transit tunnel with respect to the location of the sunken ship. While the ship was not plumb on the railroad structure, which takes a diagonal course at that point, it was sufficiently in line with the tunnel to make the officials apprehensive—consequently all service was stopped from 1:30 in the afternoon until 9 o'clock the next morning, with a resultant loss of thousands of dollars in revenue to the railroad company.

Nevertheless, fire officials justified their decision with the statement that had there been other explosions within the ship of such violence as to have ruptured the twenty-three-year-old tunnel and possibly entail a loss of hundreds if not thousands of lives, somebody would have been held criminally responsible, especially in view of the attitude of the railroad engineers who put the precariousness of the situation right in the lap of the Fire Department.

Fire is Extinguished in Concerted Attack

Excepting for such extinguishment as was accomplished by sea water up to the level of the ship's settlement, the fire raged all afternoon and evening of February 11. Enormous flood lights were brought into use in the evening and throughout the night. At about one o'clock in the morning of February 12, Deputy Chief McElligott determined that it was worth while to strike and strike forcefully. Gangways were rigged for men and hose lines to go aboard. The attack was well and deliberately planned. "It's one thing or another," McElligott was heard to say with some impatience.

The fire had traveled through the ship to Hold No. 4 and the entire amidship section on three decks was seething unmolested and shielded from the fire lines by the superstructure. The position of these lines was then changed.

(*Continued on page* 211)

Complete Destruction Is Often the Result of a Fire in a Celluloid Plant

At this blaze in the establishment of Larry Gering, Inc., at Newark, N. J., fire started with a flare in celluloid and quickly spread throughout the entire establishment. So intense was the heat that buildings facing the various sides of the plant ignited.

Celluloid Fires—A Growing Hazard

Newly Developed Uses Continually Adding to the Possibility of Fires in This Material—Some Suggestions for Handling the Celluloid Blaze

CELLULOID, though a trade name for a product manufactured by the Celluloid Company of New Jersey, is now being applied to many other similar materials, made with a pyroxylin base. In fact the term "celluloid" is used almost invariably to indicate pyroxylin products.

As an indication of the extent to which celluloid is now being used in the industries it is only necessary to list a few of the more common applications. These include toilet articles, collars, cuffs, handles for table cutlery, photographic film, billiard balls, piano keys, toys, coverings for bathroom and toilet fixtures, curtains, artificial leather, covering heels, stiffening for box toe shoes, imitation stones for rings, motion picture films, and other items too numerous to list here.

Celluloid may be regarded as a solidified mixture of pyroxylin and camphor (or a substitute for camphor). The pyroxylin is the more active ingredient, and is the one which causes the trouble. In its raw state it is classed with explosives such as gun cotton.

Combustion and Decomposition

Two distinct and separate actions are encountered in connection with celluloid fires: combustion and decomposition. The first process is characterized by a bright flame and little smoke, while the second is accompanied by smoke without flame. The second operation is the more dangerous both from the standpoint of life and fire hazard due to the fact that the fumes thrown off are highly toxic as well as explosive.

In connection with decomposition, heat is generated so that the temperature of the decomposing material increases as the process continues. If air is supplied so that oxygen is present to complete the combustion, the material will burst out into flame. On the other hand, if material is enclosed and cannot be reached by a supply of air, combustion does not take place, although decomposition continues. The gases produced by decomposition may exert tremendous pressure if enclosed air tight. Experiences with celluloid fires have conclusively proven this statement. The force generated may be sufficient to dislodge walls or floors, even though no explosion takes place.

Dangerous Ingredients in Celluloid Fumes

As to the dangerous ingredients in the fumes given off by decomposing celluloid, the following figures based on an analysis made by the Alleghany Board of Fire Underwriters a few years ago are of interest:

Nitrous oxide, 28.5 percent by volume of the gases created by decomposition; carbon monoxide, 28.3 percent; carbon dioxide, 7.3 percent.

Of these three gases the first two are considered dangerous by fire department members, while the latter is not commonly so considered, not having the toxic

effect of the first two, though producing a smothering effect.

The temperature at which decomposition takes place may vary with different specimens of celluloid, but it is usually in the neighborhood of between 250° to 300° F. With perfect insulation it might decompose at a lower temperature than that stated.

Another point which deserves attention is this: celluloid may decompose in the open air provided sufficient heat is applied to it. Once decomposition starts, the temperature increases, and the mass will eventually burst into flame unless it is cooled off by the application of water or other substances.

With reference to the temperature of ignition of the gases of decomposition, this cannot be definitely stated, although it is generally believed to be in the neighborhood of 500° F.

The celluloid itself probably ignites at a slightly lower temperature. Some authorities consider that it will take fire at a temperature as low as 325° F.

Of all extinguishing agents, water is the most effective to apply to burning celluloid. It cools the materials off to a point below reignition point and thus extinguishes

Loss of Life Often Accompanies Celluloid Fires

One person was killed, and eight severely injured, following an explosion and fire in the Consolidated Film Industries, Inc., laboratory at Los Angeles last year. The loss was estimated at a half million dollars. The view shows the interior of the film laboratory after the blaze passed through.

the blaze. But it is absolutely necessary that water be applied in sufficient quantity and sufficiently early if success is desired. So rapidly does celluloid burn, that unless water is applied almost instantly after the start of a blaze there is little chance of holding the fire—assuming sufficient celluloid is present in the establishment.

As noted above no other extinguishing agents is as effective as water, and for that reason the fire department in responding to a fire involving celluloid should figure on the use of the maximum number of streams.

Hazards Involved in Fighting Fires

In connection with fighting the fire, several hazards are involved, including the intense heat, the tremendous rapidity of spread of the blaze, generation and possible explosion of inflammable fumes, and the toxic nature of the fumes so produced.

In view of the fact that a celluloid plant may be of any size, and may produce articles of a wide variety, it is impracticable to suggest specific methods of fighting the celluloid fire. It is only possible to treat the subject in a general way, pointing out those practices which are considered most effective in operating on such fires, and the steps which are necessary to safeguard the lives of the men engaged in extinguishing operations.

If ever speed were necessary in getting streams in operation on a fire, it is in the instance of the celluloid blaze. Large quantities of water, are needed at once. Small streams will not answer the purpose. A few minutes delay may mean complete destruction of a building.

Thorough ventilation is vital, before men attempt to enter a building wherein celluloid is burning. The noxious fumes thrown off by burning celluloid are extremely dangerous to life, and many instances are on record where death has occurred due to inhaling such fumes. Operations may have to be carried on from the outside of the building, until the fumes are drawn up through the vertical shafts in the building by plenty ventilation.

Dangers from Exploding Gases

Be on the alert for explosion of gases thrown off by burning or decomposing celluloid. Until ventilation has been fully accomplished, do not permit men in near proximity to windows or doors, and particularly where they are on fire escapes and ladders. Depend largely upon heavy streams from the street, from deck guns, or from water towers until the fire brought under control or ventilation properly accomplished. When the building has been freed of the fumes, and there is little danger of men being injured by such, then closer operations may be employed.

The majority of celluloid establishments are located in buildings of no great height, which is an advantage when it comes to fighting fires therein. While some loft buildings are occupied by concerns manufacturing celluloid articles on a comparatively large scale, the limited size of the stock on hand and the presence of automatic sprinklers help tremendously in checking fires which may originate therein. The most serious fires, however, occur in buildings from one to four stories in height, and which fires can be combated successfully from the street until such time as lines can safely enter the structure without injury to men.

Remember, where the heavy yellow fumes are being generated there is an extreme explosion hazard as well as life hazard.

If storerooms are encountered where doors are closed, but where gases are being discharged through the cracks around the doors in quantity, and where men must operate in the near neighborhood of such gases, use spray streams to drive the gases back while men are working in the presence thereof. Furthermore, if the storerooms are tightly closed be on the alert for possible bursting of the walls due to the pressure created by the confined gases. See that all windows in the fire building in the neighborhood of the blaze are open so that the gases may be driven to the atmosphere. If such unburned gases reach open fire, a flash back or explosion may be expected. The water absorbs noxious gases to a large extent, and in addition, lowers the temperature of decomposing celluloid, thus checking the generation of the gases.

Aberdeen, Cal., to Change Fire Alarm—Chief Charles Borum of Aberdeen, Wash., has ordered extensive changes to the fire alarm system.

Mt. Vernon, O., Firemen Want Increase—Firemen of Mt. Vernon, Ohio, have petitioned the council for a pay increase of $25 a month. At present the men receive $100 a month, and they stated that the average pay in the state is $150.

What Are the Uses and Value of the Quadruple Combination?

Uses of the Four Combinations—Specific Cases Where Apparatus has Advantages — Must be Well Manned

By J. COLTON, Pacific Board of Fire Underwriters

MODERN life with its many conveniences may have made work and living more pleasant for the great majority of us, but it hasn't eased the burden of the fire chief. Where formerly we had one feature of daily life that might cause a job for the fire department, we now have dozens, and the task of fighting fire has now become one of the major problems of our country. The increased number of items that cause fire loss to our public and the immense value subject to that fire loss has complicated the fire chief's problems until fire fighting has become a science; one that requires brains, continued study and constant preparedness.

New types of fires and new methods have found many of our old forms of fire fighting equipment lacking and we find a constant changing and improvement in the bits of equipment offered by the apparatus market for our use. Many of these changes have been excellent and have taken their places among the standards of the craft; others have been fair but not good enough, considering their use and price, to withstand the critical eye of the fire fighter and they have disappeared, leaving tracks only in curio shops or in the Patent Office. Each that has appeared has had its champions and its enemies and has run the gauntlet of tests and discussions which have decided its future, and whether or not its supporters have been wise men, or just a bit enthusiastic, experience was the deciding factor.

Problem of the Quadruple Combination

And now we find ourselves involved in the contemplation of one of the latest offerings of the market—The Quadruple Combination. This prodigy occurred to us several years ago and made enough of an impression that it has become a problem with many of us, a problem that hasn't been given a thoroughly satisfactory answer by experience, and one that has been the basis of plenty of warm discussion.

It is true that many of us have never heard of the Quadruple Combination, and many more have never seen one. Several of our cities have them but as yet there seems to be no settled or accepted conclusion as to their real value and importance, and therefore, it seems to be about time we inquired a bit.

The value of any piece of equipment designed for a specific purpose is dependent primarily upon the use to which it is put. It is dependent upon our knowledge and understanding of its functions; and our knowledge and understanding can best be attained through discussion, which will bring out the good points and the bad points, and let us gain enough of the other fellow's experience to enable us to come to a safe and sane conclusion. Let that, therefore, be the purpose of this paper, namely, to pass along what knowledge we have and start the discussion that will give us the other fellow's knowledge in return.

Advantages and Disadvantages of the "Quad"

It is practically impossible to lay down any definite and simple rule in this fire fighting game that will give the answer—"Buy a Triple"—"Buy an Engine"—or "Buy a Quad." We will not attempt to achieve the impossible because it's too much work, but we will lay out the known facts as far as possible, arrive at a few conclusions, and leave the reader, it is hoped, with a better understanding of the advantages and disadvantages of this piece of equipment, and leave him with enough information to make his own conclusions and decisions as applied to his own problems.

What is the Quadruple Combination?

First of all let us see what we have to deal with. Just what is a Quadruple Combination? A "Quad" as it has come to be termed, is a truck combining the features of four pieces of apparatus, namely, chemical, hose, pumper and ladder trucks. It is found made to specifications with a full shift of ladders for city service, a standard pump, a hose receptacle and a chemical or water tank. The ladder equipment constitutes a full shift of ladders up to 50 feet extension and totaling 250 to 300 feet. The pump is generally one of the three standard sizes, namely, 500, 700 or 1,000 gallons per minute; and the hose compartment carries 500 to 1,000 feet of 2½-inch hose in a tray slung on or under the chassis. To put all of these to effective use sounds a bit complicated so, before we proceed with the quad, let's briefly review the uses of each of these features and their positions in service.

Uses of the Four Combinations

A chemical or water tank we know is intended for prompt service on fires in the incipient stage. This equipment must be located at the fire.

A hose truck, where simple hose trucks are found, can lay hose from a hydrant to the fire and wait there for the necessity of the second line. There is no reason why it can't carry a chemical tank to do the needful if the fire is small. Then if the fire gets away, it finds one 2½-inch line ready for it and the hose truck is busy laying a second line. This is a mobile piece of apparatus and will be found almost any place during a fire.

A pumper accompanied by a hose truck has one place and that is at the hydrant. However, we find excellent use for a combination of hose and pumper in districts where values are moderate and fires likely to be small and, where pressures are adequate for first line streams we find very good results from a triple combination which lays a line to the fire, uses its chemical if necessary, dashes back to the hydrant laying a second line as it goes. However, a pumper's place, as a pumper, is at the hydrant ready for service.

A ladder truck furnishes ladders and equipment for entry of buildings, ventilation work, rescue work and oftentimes salvage work, and its place is at the fire ready to give up its equipment as needed.

It will readily be seen that individual companies with separate pieces of equipment or with simple combinations can work to the best advantage, but we have with us the

> "A 'Quad' is a piece of apparatus for the moderate sized town that cannot immediately afford both a second pumper and a ladder company, and it is one that, when relieved of its double duty by growth of the city and its treasury, need not go into the discard."

fact that men and equipment cost money and that in certain cases we can double up or even treble up and obtain almost the same efficiency as with separate companies. In most cases we have doubled or trebled regardless of efficiency. This is found particularly where our fire record for years has shown us nothing larger than one or two company jobs, in which case we are prone to go easy on the money and to gamble a bit.

Specific Cases for the "Quad"

But here we have a case of not doubling or trebling, but of quadrupling, and many of us say it can't be done. We are right! It can't be done—without some concessions of efficiency. This applies almost equally with doubling or trebling as far as ultimate use and efficiency of a single feature goes. But there are plenty of specific cases where we can double and treble and still have that reserve strength that signifies that we can cope with the unusual when it comes along. Let's see if we can't find a few specific cases for the Quad.

First—we ought to know a city's needs. A city always needs a chemical service and our standards require at least two pieces equipped with chemical or water tanks for first alarm response.

A city needs hose or engine companies according to the quantities and pressures available from the water system and in approximately the following numbers: up to about 5,000 people, one company; up to 11,000 people, two companies; up to 23,000 people, three companies; and more companies than these may be required to give proper distribution.

Better Ladder Equipment Needed

If a city has five or more buildings three stories or higher, we require a ladder company. And right here is a point that is generally neglected. We can all name plenty of cases where a town has not five buildings three stories or higher but do have one or two buildings of that height which are of great importance to those towns. Those buildings ought to have ladder protection regardless of what our grading engineers require. And further in this regard, it might be well to mention the fact that our Pacific Coast as a whole is notoriously deficient in ladder service and equipment. In the older sections of our country we find the very first attention directed to ladders to be used for rescue work and fire fighting. Out here on the coast we have seemed to prefer standing off and socking a stream of water at the place where the smoke is showing—and it is only in the last few years that we have realized that water losses have accounted for a large percentage of our fire loss. That realization has brought a change in our native methods to such an extent that we now have cities whose fire methods are an example to the best—but we still have our laggards, and the others are rapidly falling in line.

And now that we know what equipment we need, let's look at the man power. A hose company should have five men at least. An engine company should have not less than six men for standard service; and a ladder company should have enough men to man the toughest ladder in the shift. Briefly, a 35-foot ladder extension will take 3 men, and a 50-foot extension will give five men a job that makes them at least wish for a sixth to help toe that ladder or help push.

All right, knowing these general facts, let's start work on the Quad. We want to find the purpose for which it seems best—see if anything else will do the job as well and at as little cost, draw our conclusions and find our problem—solved!

City That Needs an Engine or Engine and Ladder

Let us first take the city that needs one engine, does not require regular ladder service but still, has several important three or four story buildings where ladders may save a life or a big loss to the community. Ladder equipment on that lone engine will mean a lot some day—and maybe that city will grow up to purchase another engine when it needs a full ladder company and can turn the Quad to a ladder company with a valuable reserve pump.

Now, suppose this city does need both a ladder and an engine company. Let's try the quad here. We roll to the fire laying a line as we go, use our chemical at the fire, put up some ladders and then move off to the hydrant to pump a bit—and to save our quad from being burned up! No, we need water and ladders at about the same time. But how about it if this city had need for two pumpers and a ladder? That quad could roll in, strip its ladders and ladder crew and start for the hydrant with a line in just about the time a second engine from another station could do it; and all the time, that the first pumper would have been working. The quad wouldn't work as efficiently as separate engine and truck companies would but it would still be an improvement over a single engine or a single ladder truck and I'm sure that city would soon grow enough to remove from the quad the burden of operating as two first alarm companies.

Another case! Some cities are fortunate enough to have large mains and pressure sufficient for ordinary building heights and fires. Ten to one, there is a district in that city where pressures are low or mains are small; and another ten to one, that city has an occasional use for a few ladders. Here, the quad can be used nicely as hose primarily, with ladders and pump in reserve. Reserve strength always pays!

Must be Properly Manned

In all of these cases we are assuming that the quad is to serve the purpose of hose with reserve ladders and pump, it should be manned with at least five men trained as a hose company but drilled in use of ladders and operation of the pump. If it is to serve as a ladder with reserve hose and pump, it must be manned with enough men to handle the longest ladder and they must be drilled in the use of the other equipment. Same way for engine company use and reserve ladder and hose. If it is to serve both ladder and second engine, the job is a bit complicated; it would require pretty close to eleven men, five for the ladders and six for the engine and hose, and should first unload its ladders before proceeding as a pumper.

Now, draw your own conclusions! It is evident that separate pieces for engine and truck companies, both properly manned, will do the job best. But how many cases have we where the additional cost for a truck or an engine is available. Our large cities with their higher valued properties and higher conflagration conditions can, should, and generally do it, but our smaller cities where only two or three pumpers and a truck are required, often find enough difficulty in loosening the council up that they generally go underprotected and here most certainly a quad is better than no additional piece at all.

Again—it is evident that, if we must use a quad as both engine and ladder truck on first alarm response, we had better arrange to get those ladders off near the fire and let the pumper part of that quad act as second or third engine in. Reason? A shift of ladders a black and a half away isn't going to do much good.

Conclusions as to Values

So much for the use. Let's have some conclusions as to values.

(*Continued on page* 208)

I. A. F. C. Officers Have a Taste of Cold Weather

On the way to attend a directors meeting in New York City, Ralph J. Scott, President of the International Association of Fire Chiefs and Jay Stevens, Executive Secretary stopped at Winnipeg, Manitoba, Canada, where they were joined by other association officers to complete plans for the coming convention to be held there. Some good samaritan provided fur coats for the visitors. In the front row, left to right are Chief Charles Alt, St. Louis, Jay Stevens, Fire Marshal of California, Chief Ralph J. Scott, Los Angeles, George F. Cobb, Traffic Manager of the association, and Chief R. N. O. Harrington, Montreal. The one minus a hat in the back row is Chief James Armstrong, Kingston, Ont. Back row left is Chief D. A. Boulden, Winnipeg.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

EVEN though it is generally agreed that it is wrong to send fire alarms by means of the telephone, the public still persists in using the central exchange operator to communicate the alarm instead of operating the nearest fire alarm box and waiting for the apparatus. Some of the smaller municipalities that are not equipped with a manually operated fire alarm system, depend on the public telephone.

Telephone or still alarms require special treatment. There is no box number to direct fire companies, and it is necessary to receive verbal instruction concerning the location of the fire. There is one possible advantage, although the disadvantages overbalance it, and that is the opportunity for the central fire department operator to learn the character of the blaze. In this way he can judge how many companies should be dispatched.

Some fire alarm superintendents have a system whereby upon receipt of a telephone alarm, the operator locates the fire alarm box nearest to the reported blaze. It is then treated as a regular box alarm.

The question in full that is treated in this issue appears in the box on this page. In the box on the following page is the problem that will be discussed in the next issue. Should you have some comment that you would like to make on the next problem or if you have a question that you would like to see treated in this department, write to the "Round Table Editor," FIRE ENGINEERING, 225 W. 34th St., New York, N. Y.

HERE IS THE PROBLEM

How do you handle telephone or still alarms?

How do you handle alarms received from central stations?

The Question

Some departments have it so arranged that all telephone calls must go through a central fire department operator. A code is used so that the person on watch knows whether the call is for fire department business or if an alarm is being sent. The replies follow:

Wm. J. Noble, Chief, New Britain, Conn.: At fire headquarters is located a switchboard, manned by two operators giving twenty-four-hour service. At the other stations the boards are equipped with what we term an outside and a house telephone, or telephone working directly from the switchboard at fire headquarters. These are taken care of by the man on watch who is detailed by the officer in charge. The outside telephones are used for outside communications, while the house phones working directly from the headquarters switchboard, are used for more direct communication from fire station to fire station.

When a telephone or still alarm call is received direct at fire headquarters switchboard, the operator is required to get as much first-hand information as possible such as: street, number and location, kind of fire, etc. If the call is for a street and number in district or locality of fire headquarters itself, the operator sounds two strokes on house bell, and a company is immediately sent from headquarters. Additional information desired such as origin of fire, cause, owner of property, occupant, etc., is taken care of by the officer responding, after the completion of call.

If, however, the call or still alarm comes direct to fire headquarters from any district other than that to which the headquarters' company responds, the operator after obtaining desired information proceeds to call fire station in district or locality from which the call was received. The officer in charge of that station is given whatever information the headquarters operator has obtained, and he at once proceeds to carry out orders. Should the call be received at one of the local stations instead of at headquarters, the company officer before proceeding to fulfill the completion of the still alarm, notifies the switchboard operator at fire headquarters of his company responding to a certain street, giving exact number if possible.

In the handling of all calls the operator in charge must see that districts left open by a company responding to a still alarm, are properly covered, by ordering another company to cover up until company of that particular district reports back to its station.

The bell alarms are received at the various fire stations simultaneously on a tape recording system. The blows or strokes are recorded on tape, and the tape is read at the various stations by the man on house watch and verified by the officer in charge. The running card of the box number recorded on tape is taken from the rack and the officer has the cards so systematized that he can, at a glance, determine whether or not his company responds, and also what companies are called out. In case of an alarm in the interim, he can cover up for company out of quarters.

In conjunction with a fire or bell alarm, we have located at fire headquarters, an electric siren which is operated by switchboard operator after recording of second blow on tape of any alarm of fire, which acts as a warning of the approach of fire apparatus. In this way traffic is cleared before the apparatus starts. This avoids accidents and unnecessary delays. In the case of a second or general alarm, ten blasts are sounded on the siren which calls out the off-platoon. This same siren is operated for all bell alarm fires between the hours of six a. m. and eleven p. m.

J. F. Sullivan, Chief, Fall River, Mass.: Telephone or still alarms are handled through the department switchboard in the Signal Station by men continuously on duty there. Calls through this board are given right of way by telephone operators at telephone exchange. For a number of years this method of alarms averaged about seventy-five per cent of the total number of fires in our city and the service and expediency with which these calls are transmitted without a slip-up, speaks highly of the operators and the general public who are the users of the telephones.

All alarms received at the Signal Station come in on a circuit board. The number of the box is verified by taps operating in connection with the circuit on which the box alarm is coming in. The operators, after verifying the box number, immediately sets it up on the transmitter dial for the number of rounds to be sent out to the stations. A hook is pulled sending out a

warning blow after which the box number is sent out on fast time. This fast time is two rounds, then the slow time is transmitted for two rounds. Our system is a manually operated one of recent installation.

Chas. E. Tovee, Chief, Chico, Cal.: The operator receiving a phone call, inquires as to location and type of building involved by fire. The location is then transmitted to alarm system, using character wheel for the box nearest the given address. A regular assignment of men and apparatus respond to the fire. Assignment is determined by location of fire, i.e., whether the location is in a residential or commercial district. If a call is received for a chimney fire, response is made with a triple combination pumper, no general alarm being sounded. Our reason for sending a triple combination is to at all times be prepared to meet conditions such as may be encountered should the blaze have spread beyond the chimney before the company arrives.

All our equipment is housed in one station which is located central to the mercantile section. Our responding radius is two miles which is divided into mercantile and residential districts. The type of equipment responding is determined by location of fire.

W. H. Funderburk, Chief, Springfield, Ill.: We have no fire alarm telegraph system, so all alarms are handled by telephone. If the fire is reported as small or other than a building fire such as an automobile, etc., it is termed a still alarm and the nearest company is sent. In other words, it is necessary for the operator after receiving report on nature of fire to use his judgment as to whether one or more companies should be assigned for response. As a general rule, not much chance is taken and the usual assignment is made.

We have but one central station with a switchboard and operator who takes care of all alarms. This board is a direct trunk from the public exchange with all houses hooked up. The operator can call houses or companies separately or collectively by means of code ringing, such as one ring, fire alarm; two short rings, a still alarm, three short, department business; etc.

Oliver T. Sanborn, Chief, Portland, Me.: Telephone or still alarms are handled differently, depending on the fire. Still alarms for fires in buildings are transmitted as box alarms, after dispatching the nearest company. The only exception to this is chimney fires, in which cases the regular still alarm assignment is dispatched, consisting of a chemical, truck and engine. Along the water front the fire boat also responds to stills. For fires in automobiles or electric cars, only one piece of apparatus responds.

Alarms received from central stations are transmitted as straight box alarms. All plants having fire alarm protection, are given a number which is listed on our regular running card.

Geo. J. Shaw, Chief, Newburgh, N. Y.: We handle the telephone or still alarms in the following manner: A call is sent to police headquarters which has a direct telephone line to all fire houses. In making assignment in response to call, the desk officer sends the fire company located nearest to the scene of the call.

In case of a call from outside the city for assistance, the officer on duty at police headquarters must notify the fire chief of such call, he being the only official except the city manager having authority to send fire apparatus out of the city.

Our city is equipped with a fire alarm box system, but we have no central fire alarm station included in the system.

John W. O'Hearn, Chief, Watertown, Mass.: If definite information is received why fire apparatus is wanted, it is left to the judgment of the officer in charge to dispatch what pieces of apparatus are needed. Should information be incomplete or not fully understood, regular assignment to box alarm in vicinity indicated is sent.

James Black, Chief, Grand Forks, N. Dak.: We have a very satisfactory arrangement with the telephone company whereby any person reporting a fire is connected with fire department headquarters over a special wire which is used only for that purpose. Both our stations are on the line at the same time and the call is verified over a direct line between stations. There is very little delay in assigning the necessary companies to respond.

One engine and one truck company respond to box alarms as per our running card. Our city is equipped with a box alarm system which has proven very satisfactory. I prefer the box alarm system to any other, provided of course that sufficient boxes are provided to cover the entire area of the city.

Adam A. Ritter, Chief, Clifton, N. J.: For all still alarms, we send three taps on the gong circuit, which notifies all companies that some company is going out. We then telephone the nearest company, giving location of fire and street number.

If a box alarm is sounded, all companies in that district respond. Two pumpers and a hook and ladder truck respond to all box alarms in the business and residential sections, while one pumper and one combination hose and chemical truck respond to alarms from outlying districts.

Burr Hamilton, Chief, Marion, Ind.: Our department has a P.B.X. telephone switchboard with three trunk lines to telephone central. All calls to the department must come through this board, making it impossible to call any engine house unless through the operator.

All telephone fire alarms are therefore handled by the operator on duty. When an alarm is received and its nature and seriousness are unknown, the operator notifies by phone all companies responding to that locality and then confirms the alarm over the alarm system by means of the transmitter. Should an alarm be received by telephone and its exact extent is a certainty, then just sufficient apparatus to cover such conditions is called into action.

During the past year a total of 463 alarms was received, 251 of this number being telephone or still alarms.

Howard Wheat, Chief, Port Jervis, N. Y.: All telephone or still alarm calls are handled through our police station. Immediately upon receipt of an alarm, the chief of department or an assistant is notified. If the fire is a small one, a general call is sounded which brings all members of companies to their fire houses. Drivers of apparatus are as a general rule located near the station to which they respond and the fire company reporting is sent to the fire together with company located in district from which fire alarm is received.

E. E. Chase, Chief, Lynn, Mass.: Telephone calls or still alarms are responded to by two pieces of apparatus from the nearest station. If the fire is more than can be handled by this assignment, they immediately pull a box which brings out the regular response of equipment.

All alarms sent in from the central office (bell alarms) are answered by the regular assignment of apparatus which responds to all alarms in that district. We have been trying for a long time to get the public to pull a box in case of fire instead of telephoning.

W. H. Wayland, Chief, Scotia, N. Y.: We handle telephone calls by sounding a general alarm from the fire station by means of a manually operated transmitter, giving the location of the fire by number, of which we have thirty-six in the village. Still alarms are handled by sending one piece of apparatus and one paid man, together with whatever volunteers are around to go out with the apparatus. The nature of these calls are generally grass fires, dump fires, chimney fires, etc. We also have a double head five horse power siren for

(*Continued on page* 211)

HERE IS THE PROBLEM FOR THE NEXT ISSUE

Does your department make it a practice to give frequent talks to school children?

Is this scheme effective?

How does your plan operate?

WITH THE EDITOR

Fire Stations on Both Sides of Railroad Tracks

A Middle States Chief of a Fire Department recently made a strong plea before the city officials to immediately establish a fire station on the opposite side of the railroad track to that on which the headquarters house was situated. His reason for this request was based upon the repeated experiences of his department, in answering fire alarms, when the apparatus had been held up from five to fifteen minutes by long trains of freight cars stopped at the crossings in order to shunt cars onto siding or for other purposes.

The chief reminded the officials of his city that delays of this duration might easily mean—and in fact in some instances resulted in—not only heavy property damage, but also loss of life.

It can readily be seen that this result is quite probable. While the apparatus is waiting for the track to be cleared, so that it can proceed across in safety, the fire is rapidly increasing in volume, and it takes only a very few minutes for a small blaze to assume great proportions. On the other hand, and more important still, the rescue of human life to be successful, must be made during the beginning of the fire. Later on it may be too late. It is quite within possibility that the alarm for a fatal fire may come when a heavy freight train is shunting cars at a crossing, and when this occurs it is practically impossible for the railroad to move its train quickly enough to allow rapid passage for the fire apparatus. They may break the train to free the crossing, but even this operation takes time that is invaluable to the fire fighters and those they are called upon to assist.

The most logical course to pursue in cases of this kind is that suggested by the chief. A fire station with apparatus on the opposite side of the track will take care of all first alarms from that neighborhood and will insure the immediate response so necessary to insure safety to the citizens and the protection of their property.

Fire Department Conducts Watchmen's School

An important and interesting experiment has recently been conducted by the Fire Department of Rockford, Ill., which proved quite successful. This was the holding of a three-day school for watchmen. This is, as far as we know, the first time that a city of medium size has attempted anything of this kind. The Fire Department of Los Angeles, Cal., has inaugurated and successfully carried out a Watchmen's School on fire prevention lines, and some work of this kind has been done by the insurance fire patrols of various cities.

The importance of the instruction of these men in the principles of fire prevention, fire control and the transmission of fire alarms cannot be over-estimated. As a class these men know lamentably little of such matters and through lack of proper instruction and emphasis, care less. It will take very little effort, in most cases, to direct their attention and arouse their interest in the importance of a knowledge of these things, and once this is accomplished, the instruction should proceed with smoothness and dispatch.

The experience of the fire departments of these two cities in conducting these schools would seem to justify others in taking up this most important work. Most watchmen who are conscientious have the confidence of their employers. They realize that they are responsible for the safety of property often running into many thousands of dollars in value. If they can be made to remember that this safety requires not only the proper guarding of the property from theft and burglary, but also the preserving of it from the perils of fire, a mighty big thing will be accomplished, and a long step taken in reducing the losses from fire.

Quick action on the part of a watchman in giving an alarm of fire in its early stages will probably mean the saving of many thousands of dollars in property damage, not only to his own employer, but also to the owners of other structures in the immediate vicinity of the building he is set to guard. Thus the fire department has a very keen interest in the proper instruction of such men in this particular phase of their work. In the case of a small blaze, too, the watchman, after he has called the fire department, can often do good work in extinguishment and perchance have the fire out with little or no damage, before the city department arrives upon the scene. He should be taught the location of every fire extinguisher in the building and be prepared to quickly meet any emergency of fire just as efficiently as he would that of robbery. All of this can be taught him in the school for this purpose and it stands to reason that his value to his employer will be increased many fold by its instructions.

Need of Drill Tower for Company Evolutions

It is rather astonishing, considering its necessity in conducting fire drills properly, how many fire departments manage to get by without a serviceable drill tower. This auxiliary to the fire school has become indispensable in many of the evolutions conducted in such schools, and any department which does not possess some sort of a structure of this kind will of necessity find itself handicapped in instructing its men in hose and ladder work.

The expense of a serviceable tower is by no means prohibitive. In fact, considering the need for it in conducting the exercises of the fire school, the money spent

upon the erection of a well built tower is comparatively small. A department in the West recently investigated the cost and found that they could erect a four-story tower at a cost of about one thousand dollars. In this case, it was planned to have the concrete work at the base of the tower constructed by the city employees, and the steel work erected by members of the local fire department.

The advantages of such a structure in the instruction of the men of the fire school and the fire department after they have become members of the fire-fighting forces, will far outweigh any such comparatively trifling expense. The added efficiency in fighting fires will pay for the tower in a very few months in the saving of property involved in fire and the steadiness acquired by the men in rescue work.

The modern fire department, to keep abreast of fire-fighting practice, must provide its men with every facility to acquire the greatest knowledge possible in all matters connected with the handling of fires, and such instruction cannot be complete without the evolutions calling for proper hose and ladder drills. Such drills, to be properly conducted, require some such structure as the drill tower affords.

Fire Alarm Office May Be Abolished

In his annual report, Chief John H. Espey of Elmira, N. Y., has recommended that the office of Superintendent of Fire Alarm Telegraph, formerly held by the late Will Y. Ellett be abolished, that there be a complete re-arrangement and re-numbering of the fire alarm boxes, and that seven men be added to the fire department.

Chief Espey urged that the men and officers be given substantial increases in salary commensurate with the positions held, and that another inhalator be purchased. The department had ten calls last year to resuscitate gas and drowning victims, and on four occasions, the persons were completely revived.

Rhode Island Chiefs Meet

The second annual banquet of the Fire Chiefs' Club of Rhode Island was held in the Hotel Dreyfus, Providence, R. I., on February 13 with 175 members and guests present.

Chief Frank Charlesworth, of Providence, is President of the club and Chief A. J. Cote, of Woonsocket, is First Vice-President. E. A. Capwell is Second Vice-President, Dr. T. V. Daley is Secretary, and Clarence Cook is Treasurer.

The guests were Governor Norman S. Case, of Rhode Island; Lieut.-Governor James G. Connolly, Senators W. H. Vanderbilt, Daniel F. McLaughlin and Harry T. Bodwell; Representative Ira Marcus, Assistant Attorney General Sigmund W. Fischer, Fire Commissioner Elmer S. Cowan and Fire Commissioner William G. Thurber, of Providence; Chief Selden R. Allen, of Brookline, Mass., President of the Fire Chiefs' Club of Massachusetts; Chief R. A. Bogan, of Baton Rouge, La.; and P. Hildreth Parker, of Belmont, Mass., President of the Box 52 Association of Boston.

There were speeches, souvenirs, and entertainment and a good time was enjoyed by all present.

HARRY BELKNAP.

NEW ENGLAND CONVENTION DATE SET

The eighth annual convention of the New England Association of Fire Chiefs is to be held at Rutland, Vt., on June 24-27, 1930, headquarters, the Hotel Berwick. This was decided at a meeting of the Board of Directors and State Vice-Presidents in Boston on February 19.

Chief Swanson Marks 25 Years' Service

Charles E. Swanson, head of the Fire Department in Everett, Wash., completed twenty-five years' service in the department.

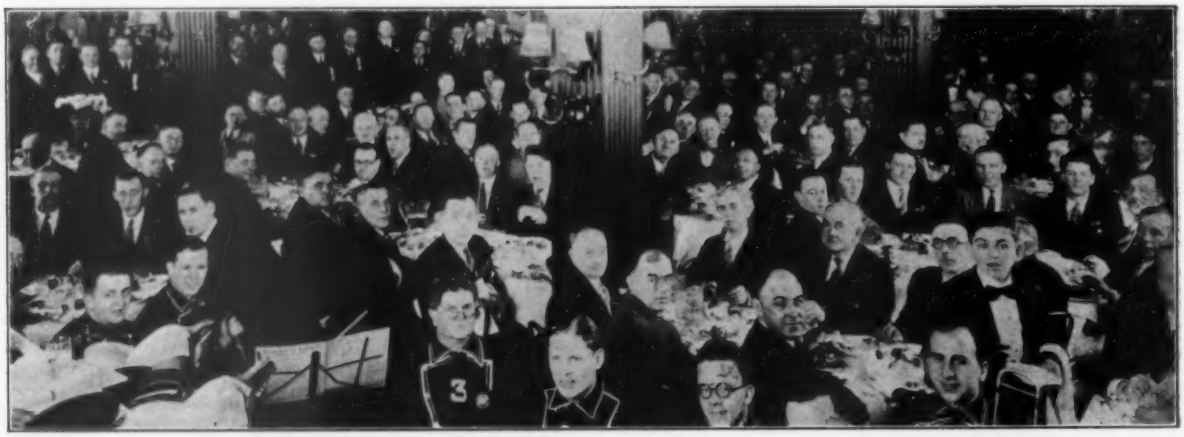
In recognition of the event, a dinner was arranged in his honor at the Elks Club. It was attended by three hundred persons, including many city officials and chiefs from the state of Washington.

On behalf of the Fire Department, the Chief was presented with a beautifully engraved gold badge by Chief George M. Mantor of Seattle. W. A. Groce, Assistant State Fire Marshal, acted as toastmaster. Presidents of each of the service clubs in the city made brief speeches in honor of the chief.

On February 6, 1905, Mr. Swanson left the employ of a local company to assume the job of pipeman in the Fire Department. He was made a lieutenant in July, 1907; captain, October, 1908; assistant chief, January 5, 1910. Chief Swanson served in this office until November, 1923, at which time he was made head of the department.

Chief Swanson is also a member of the committee in charge of the arrangements for the fire college of the Northwest school to be held in Seattle in March.

Chief Moser Asks for New Fire House—Chief D. K. Moser of Warren, Ohio, appeared before the city council to win approval for a new fire station. He stressed the point that the railroad has divided the city, often hindering the response of apparatus.



View at the Second Annual Banquet of the Fire Chiefs' Club of Rhode Island, at Hotel Dreyfus, Providence

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Use of Double Suction

To the Editor:

Will you be kind enough to answer the following question:

Lay 100 feet of 2½-inch hose from hydrant, hook up at end and pump through 50 feet of 2½-inch hose, equipped with 1⅛-inch nozzle. 85 pounds at the hydrant. Could I pump more water with a double suction, or could I pump just as much with a single suction? Suctions are 10 feet each. Which one would create a vacuum first? Which one do you recommend?

Yours truly,

G. H. M.

Answer: As I interpret the problem, you stretch 100 feet of 2½-inch hose from the hydrant to an engine, but instead of connecting the 2½-inch hose directly to the intake of your pumper, you insert suction hose between the end of the 100 foot line and the engine.

If this is the case, there would be no appreciable difference between using a single length of suction and a double suction, assuming that suctions are 4, 4½ or 5-inches in diameter. The friction loss in such a short length of large diameter hose is indeed small.

The governing factor in this problem is the 2½-inch hose from the hydrant to the engine, which would be first affected by a vacuum.

A better layout than you suggest would be to stretch the 2½-inch hose directly from the hydrant to the engine, or if a larger stream than 1⅛ inch is to be employed on the 50 foot line, stretch two lines of 2½-inch hose from the hydrant to the engine. In each case it is assumed that there is a definite reason for using the 2½-inch hose between the hydrant and engine.

If not, then a still better layout would be to place the engine at the hydrant and stretch your line from there on to the nozzle. A 150 foot line of hose is not long enough to justify the relay arrangement of placing the engine in the center of the line.

Gasoline Fumes, Ladder Trucks, etc.

To the Editor:

Will you kindly answer the following questions:

1. Is there any humidity in gasoline fumes from vaporizing gasoline when confined to or in close quarters?

2. To what extent are aerial ladders used as water towers? If used, what pressure would be safe to use on a 1½ inch nozzle with ladder extended to fit in a vertical position, that is to say, before there would be any danger of the ladder tipping backwards from pressure at the nozzle?

3. Is it true that the evolution of using "dough-nuts" (a section of hose strapped to the back) is being discontinued in cities where it has been in practice for years?

4. In some cities pumping engines are used in forcing fresh air into gas filled wells or man-holes in rescue work. How long is it safe to use an engine in such work, before there would be danger of injury to the machinery of the pump.

Answer 1. If the gasoline vapors completely fill the space you have reference to, there would be no vapor present in such a space. On the other hand, if the gasoline fumes do not completely occupy the said space, there may or may not be humidity present.

Answer 2. Aerial ladders are quite extensively used for delivering streams at high positions, particularly in smaller cities. While ladders so used in no manner remove the necessity of water towers they do, however, provide quite a satisfactory means for operating on high fires, where other equipment is not available. There is always the danger of the ladder tipping backward, if it is set vertical, and if large diameter stream at high pressure is employed at the top of the ladder. However, such ladders are usually placed at an angle, inclined toward the building, so that there is little or no danger of ladders being upset through the use of large caliber streams at high pressures.

The stability of the ladder depends upon the height at which the nozzle is placed, the angle at which a ladder is set, and the nozzle diameter and pressure. If it is necessary, in close quarters, to use the aerial ladder in an almost vertical position with a high pressure and large diameter nozzle, the ladder can be guyed with ropes to prevent its upsetting.

Answer 3. It is impossible to say whether or not the evolution employing a section of hose rolled and strapped to the back is going out of vogue. There is, however, a tendency on the part of the fire departments throughout the country to follow a general standard in evolutions, and if such continues there is likelihood of the evolution referred to becoming less popular.

Answer 4. The answer to this question depends upon the condition of the pump, its lubrication, and the speed at which it is being driven. While pumpers have been used for delivering air to manholes, or other dangerous points during rescue operations, the practice is certainly not a good one from the standpoint of the mechanical end of the pumper. It would be far better to employ a small hand operated blower, if forced ventilation is necessary, rather than use a large pumping machine which is not designed for handling air. Remember, delivering air from a pumper requires that pumpers be run idle, and there is always tendency of racing it. A thousand-gallon pumper will deliver but one thousand cubic feet of "free" air (air at atmospheric pressure) per minute, and a small hand operated blower will accomplish the same thing. The reason for this is that the blower is designed to deliver air whereas the pumper is designed to deliver water at high pressure.

Pump Data

To the Editor:

Will you kindly enlighten me on the following questions:

1. Is a rotary pump a positive displacement pump?

2. After the tank of water on a rotary pump fire engine has been used, and the pump drained as a precautionary measure in cold weather, does the pump have to be primed before drafting?

3. A rotary pump fire engine has a run of about three miles in a temperature of five degrees above zero. The only water to be had is by drafting. The tank and pump have drained dry. The strainer carried on said engine is placed in water, with the top of the strainer about four inches below the surface. Would the strainer be so chilled as to form ice on it—enough to prevent drafting and cause a delay of thirty minutes or more.

Respectfully

A. J. K.

Answer 1. The rotary pump is a positive displacement pump.

Answer 2. The pump should not have to be primed if the lift is not excessive. Rotary pumps have been known to draft water a height of 28 ft., although this is a great deal more than even the Underwriters' engineers require of pumps in first class condition.

Answer 3. So many factors enter into this particular question that any answer given must be based upon certain assumptions. It might be possible for the strainer to freeze up, if the apertures are very small, and if the water into which the strainer is placed is very near freezing point. But it is hardly likely that the freeze-up would be permanent, for as soon as the temperature

of the strainer was raised to the temperature of the water, ice would disappear therefrom.

Strainers are frequently clogged by letting them rest on the bottom of a muddy body of water, particularly where leaves and other debris have accumulated. In such case, no water at all may reach the pump before the strainer is completely stopped. It is difficult indeed to say with certainty that freezing would cause the stoppage of the strainer under the conditions you have outlined.

In the answer above it is assumed that the pump is properly operated. If the churn valve is not fully closed, the pump cannot of course take suction.

Operation of Extinguisher

To the Editor:

If I am not asking too much, I would like to know just what the workings of a soda and acid extinguisher are, that is, the reaction of the acid and the soda. What makes the pressure that puts the fire out?

This question was brought up at one of our meetings and no one was positive just what each material did.

I would appreciate your answering this for me.

P. Z. N.

Answer: In an ordinary soda and acid extinguisher the bottle contains commercially pure sulphuric acid; the cylinder of the extinguisher contains a mixture of bicarbonate of soda and water.

When the extinguisher is inverted, or when the bottle is broken, the sulphuric acid and the soda solution mix. The reaction produced between the soda solution and the sulphuric acid generates carbon dioxide gas (commonly known as carbonic gas). When the extinguisher is in an inverted position, the discharge port is near the ground and the base of the extinguisher is at the topmost point. The gas, being lighter than the solution, rises upward and accumulates in the bottom part of the extinguisher, which is, in the inverted position, at the top. This gas forms a cushion, reaching somewhere in the neighborhood of 100 pounds, and provides the force for expelling the soda solution.

As far as the extinguishing effect is concerned, by far the greater part of this effect is produced by the solution itself which is hardly more than plain water. In other words, the cooling effect of the solution is what produces the greater results. Of course, a small amount of gas may leave the extinguisher with the stream, but this gas being so limited in quantity produces no marked effect on the fire unless the fire is in a closely confined space where the gas is kept in the neighborhood of the burning material. Such a condition is not frequently encountered; furthermore, the draught created at a fire carries carbon dioxide gas away from the zone of combustion. Thus the extinguishing function is confined largely to the cooling effect of the water.

Occasionally, where an excess amount of soda is used in the solution, a small quantity of free soda passes out in the solution, and this soda, upon heating, throws off a small amount of carbon dioxide gas, which also has a slight extinguishing effect.

New York Fire Commissioner Visits Elmira

A party of New York Fire Department officials visited the American-LaFrance and Foamite Corporation plant at Elmira, N. Y., to inspect some apparatus that is being built at this factory for New York. In the photograph from left to right are Richard J. Marshall, Deputy Chief in charge of the Repair Shop, Joseph Zengerle, Board of Estimate and Apportionment, Hubert J. Treacy, Chief of Bureau of Repairs and Supplies, and Hon. John J. Dorman, Fire Commissioner.

"True and False" Question

To the Editor:

In one of the issues of FIRE ENGINEERING one of the "false and true" questions reads as follows: "Engine pressure is always equal to nozzle pressure plus friction loss in the hose and at connections." Would you please explain why the answer to this question is "false," as we had quite an argument about same?

Respectfully yours,

M. R.

Answer: The answer to the question is "false" because engine pressure is not always equal to the nozzle pressure plus friction loss in the hose and at connections. For example, if the line is laid up an incline so that the nozzle is well above the engine, the engine pressure would then be equal to the friction loss plus the nozzle plus the back pressure (or static head) in the elevated line. Thus you see that the statement "engine pressure is always equal to nozzle pressure plus friction loss in the hose and at connections" is false.

Hamburg Fire Chief Visits New York

Dr. Otto Sander, Chief Commanding Officer of the Fire Brigade of Hamburg, Germany, spent three days in New York during the last week of February on a whirlwind tour of the New York Fire Department. He was escorted by Assistant Chief Joseph B. Martin and his son Capt. Joseph Martin. Dr. Sander's visit was principally to observe the uses to which marine and oil fires are handled with fire foam. He gained considerable information on that score by a visit to the Standard Oil plant at Bayonne, N. J.

Otherwise his trip, he said, was most interesting and very illuminating and he observed the New York Department in action within a half hour after his arrival when Chief Martin whizzed him to a fire in the white light district of Broadway. It was the Chief's first visit to the United States and the sight was beyond description, he said.

He came as the guest of the Hamburg-American line and other steamship interests in his home city. Upon his arrival he issued a statement outlining the objects of his visit. He had little spare time from the moment he put foot on New York until the Hamburg sailed within three days. A fast and furious tour gave him a glimpse of the school of instruction, the telegraph central station in Central Park, the fireboats, the wreck of the North German Lloyd liner "Muenchen," the high pressure station, the Roxy theatre, Wanamaker's store and Fire Headquarters. He lunched with the platoon on duty in Engine 72 in the high hazard district, he inspected a hotel-garage, looked around the city from the top of the Chrysler Building (76th floor); rode in the subway, and crammed into three days what would ordinarily require a week to do, without the aid of a New Yorker such as "Joe" Martin and the facility of his red car, siren and bell.

Chief Sander visited the National Board of Fire Underwriters and obtained much literature. He expressed grief over his inability to meet Chief John Kenlon, due to the latter's illness, but he was profuse in his praise of the New York Department, its personnel and its apparatus.

Dr. Sander is a graduate of the University of Stuttgart with a degree in Engineering. He is in command of 721 firemen, twenty-five engines and fourteen ladders of the Magirus make. He has been the Chief Commander of the brigade since 1926.

WM. JEROME DALY.

San Jose, Cal., May Buy Apparatus—San Jose, Cal., is planning to purchase fire apparatus and equipment. It is believed that both a pumper and ladder truck will be purchased.

San Jose, Cal., Orders Equipment—The council of San Jose, Cal., has ordered the purchase of four chassis to replace the ones now used on Chemicals 1, 4, 5 and 6, three cellar nozzles, ladders and various sizes of hose.

BLAZE STARTS IN TRUCK SHOPS OF BOSTON ELEVATED RAILWAY

Rain Aided in Preventing Spread of Flames —Fire Forces Directed by Chief Daniel F. Sennott—Cellar Pipes Do Good Work

By HARRY BELKNAP

FLAMES that apparently started in the forge shop of the Boston Elevated Railway, from an oil fed forge, had obtained great headway before discovered, and developed into a three-alarm fire. Employees at the shop manned a hose line from a hydrant in the yard and attempted to fight the blaze.

The first alarm was received at 9:47 p. m., the second filed five minutes later and third sent at 10:11.

The apparatus called to the scene consisted of fifteen engines and fifteen hose wagons, five hook and ladder trucks,

Many Streams Were Used at the Railway Shops Fire

two water towers, one rescue company, two lighting units, emergency wrecker, and wagons of the Boston Protective Department, also fuel wagon and emergency trucks of the Boston Consolidated Gas Company and Elevated Railway. There were approximately 175 officers and men on duty.

Lieutenant Eugene J. Doherty, detailed to Engine 3, the first company to reach the scene, immediately ordered a second alarm, for which prompt action he was later commended in general orders.

The building involved has been visited by several large fires in past years. At one, about twenty years ago, Captain Patrick Lanigan, of Ladder 13, was killed by a falling wall. The structure is seventy feet wide and 300 feet long, and was originally three stories high. At present the rear section for a distance of 260 feet is only one story in height. The upper floors were gutted in a previous fire and when repairs were made the roof was put on over the first story.

The front of the building is used for offices and work rooms and the rear for a truck shop and forge shop. The forges are oil burning, the oil flowing by gravity from a tank slung under the roof. The main oil tank is buried in the yard.

When the first city apparatus reached the scene the sky was illumined by the flames. The fact that the alarm was sounded from the private box located at Harrison Avenue on the other side of the yard from the blaze caused delay in getting into action as long lines of hose had to be laid through the yard while other companies were sent around to attack the fire from the Albany Street side.

The first alarm brought out Deputy Chief Quigley, District Chief Minnehan, Engine Companies 3, 26, 22, and 15, and Ladder Companies 3 and 13. The second alarm summoned Assistant Chief Fox, Acting District Chief Ward, District Chief McCorkle, Engine Companies 35, 23, 43, 10, and 13 and Ladder Companies 17 and 20. The third alarm called out Chief Daniel F. Sennott, Engine Companies 39, 6, 24, 32, 2, and 37 and Ladder Company 30. There were also two water towers, a rescue company, and police and hospital ambulances at the scene. Several firemen suffered minor injuries.

Approximately 11,500 feet of 2½-inch and three-inch cotton rubber jacketed hose was used. The nozzles were 1¼-inch and 1½-inch. There were eighteen hose lines in operation, and the total discharge was about 7,500 gallons per minute.

The ladders used were one 85-foot aerial to the roof of the 3-story section of the building, three 30-foot ladders, and eight 25-foot ladders.

The water pressure at the hydrants ranged from thirty-five to fifty-five pounds. There were eight hydrants supplied by a 12-inch main in Harrison Avenue and a 12-inch main in Albany Street. One line was run from a yard hydrant supplied by a 6-inch private main.

There were no fire walls or fire doors separating the one-story shed from the three-story section of the building and the fire had communicated to the latter when checked by hose lines run in through the front door of the larger structure. There were no sprinklers or thermostats in either building. Both were of brick construction.

Shortly after the arrival of the department the oil tank under the roof of the one story shed where the blaze originated was ruptured and spread the fire which burned fiercely in all directions. There was a low cock loft between the ceiling of the shed and roof, pitched to throw off the rain. The loft, about four feet high and extending under the ridge pole the entire length of the shed, afforded the fire an opportunity to spread laterally. The flames were stopped after they had eaten into the partitions of the higher building.

In order to reach the hidden flames beneath the roof it was necessary to use Carey and Bresnan cellar pipes which were operated through holes cut in the roof.

There was a large 4-story brick storage building situated directly opposite the burning structure and separated from it by a 25-foot alley. This was undamaged.

Efficient work by the Boston firemen amid dense smoke saved the three-story section and confined practically all the loss to the one-story shed. Danger from flying embers was minimized by a heavy rain.

Chief Daniel F. Sennott directed department operations. He was aided by Assistant Chief Henry A. Fox, Deputy Chief Quigley, and three district chiefs. Eugene C. Hultman, Building Commissioner and Acting Fire Commissioner, went to the fire on the third alarm. He was Fire Commissioner under Mayor Nichols and is still acting in that capacity until his successor appointed by Mayor Curley has been approved by the civil service commission.

Newport Department Calls Outside Aid

Twice within three weeks Washington Square, the civic center of Newport, R. I., was visited by serious fires, with an aggregate estimated loss of $350,000. On January 27, fire starting from an undetermined cause in the cellar of the Coggeshall Building, a brick-joisted structure of four stories, swept up a freight elevator shaft cutting off the escape of twenty-seven students of a Business College occupying the third floor. All were safely rescued with but minor injuries, nine jumping to a Browder life-net, the balance of the students being brought down ladders.

The fire was brought under control in two hours but the two upper floors were burned out. A ruptured fuel oil tank

Blaze That Broke Out in the Civic Center of Newport, R. I.

created a stubborn cellar fire, which resisted extinguishment, until 500 pounds of Foamite were used.

At 1 a. m. on February 18, Box 3 again summoned the department to the Square, where the block between Charles and Colonial Streets comprising the Odd Fellows' Building,

the Newport Realty Building and the Builders' and Merchants' Exchange were involved in a sweeping fire, which engaged the whole department for eight hours together with apparatus from Fall River, Mass.; Middletown, R. I., and the country estate of Senator Wm. H. Vanderbilt.

All the buildings involved were of wood construction with open stairways and were a dangerous hazard.

Water supply was supplied at fifty pounds pressure from 8- and 12-inch mains, supplying eight available hydrants of four and five inches.

Fifteen engine streams of 1⅛ to 1½-inch, and a Baker two-way deluge set with 1½-inch tip were used.

The following American-La France apparatus were used: One Metropolitan 1,000-gallon, four 750-gallon pumpers, three combination wagons, and two city service trucks; also one Reo 300-gallon triple and one Reo double tank combination.

Engine 3 of Fall River and a crew of ten in charge of District Chief Conroy and accompanied by Fire Commissioner Cyrus K. Rounseville, made the eighteen miles over snow covered roads in thirty minutes.

Too Much Help May Prove to be a Hindrance

Fire completely destroyed the Coggeshall Building in Newport, R. I. Note the rescuers climbing up the ladders. On one ladder alone there are six men, and five persons on another.

Operations were in charge of Chief Joseph S. Lawton and Acting Deputy Chief Freeborn. Total insurance carried was $200,000, and a majority of losses were total.

JOHN S. COGGESHALL.

WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designated in the headings. These figures, compiled from telegraphic reports, are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousand.

Week Ending February 21

SYRACUSE, N. Y.—Hopkins building damaged..... 45
BOSTON, MASS.—Machine shop, Boston Elevated Railway..... 80
ELIZABETH CITY, N. C.—McCabe & Grice Dept. store..... 80
DAVENPORT, IOWA.—Wire dept. of Nichols Wire, Sheet & Hdw. Co. 45
WAUSAU, WIS.—Store and apt. bldg. of M. Levin..... 40
STAMFORD, CONN.—Beck-Hazzard Shoe store damaged..... 45
JUDSON, N. D.—Otto Schacht bldg. adj. property..... 25
PRINCETON, IND.—Business and residential property..... 125
LANSING, MICH.—Hangar and 9 planes of Wolverine Flying Service 100
SEATTLE, WASH.—Oceanic building damaged..... 175
QUEBEC, CANADA.—Property of St. Lawrence Clothing Co..... 25
CLEVELAND, OHIO.—Salesrooms of Seagate Tire & Rubber Co... 65
HAZLETON, PA.—Saras building damaged..... 80
ROCKFORD, ILL.—Plant of Union Overall Co..... 40
BALTIMORE, MD.—Sheds of Wm. C. Dorsey & Sons Lumber Co. 80
ROCKAWAY BEACH, N. Y.—Business property of John Schottler.. 150
DETROIT, MICH.—Riverside Machine Depot damaged..... 80
BLOOMINGTON, ILL.—Marquis Book store and Smith Drug store 80
WEST POINT, KY.—Four buildings destroyed..... 35
ENGLISH, IND.—A. T. Turley Wagon plant damaged..... 25
OSHKOSH, WIS.—Radford Co. whse. damaged..... 100
BERLIN, N. H.—Coal yard of C. N. Hodgdon Co..... 25
NEWPORT, R. I.—Odd Fellows bldg., adj. property..... 150
CHIPPEWA FALLS, WIS.—Apt. house of Mrs. C. B. Conners.... 25
LEOMINISTER, MASS.—Nickerson block, Main Street..... 150
WEST CHESTER, PA.—Barn on H. Paxson farm, Grove-Kelton Rd. 25
DURYEA, PA.—Swanthowski meat market damaged..... 30
SKOWHEGAN, ME.—Business block damaged..... 30
PORTSMOUTH, OHIO.—Schmide Watkins Heating Co. Plant..... 25
GREENWOOD, ARK.—High school destroyed..... 25
NEW BERLIN, ILL.—Several buildings damaged..... 30
ELIZABETHTON, TENN.—Building of Service Lumber Co..... 40
JACKSONVILLE, N. C.—High school building destroyed..... 25
SHERBROOKE, QUE.—Mac Rae block damaged..... 30
OTTAWA, ONT.—Apartment block, York and Williams Sts..... 80
MANITOWOC, WIS.—Box factory of Schnorr Bros..... 40
LINCOLN, ILL.—Lincoln Theatre damaged..... 65
HANFORD, CAL.—Plant of Mt. Whitney Corporation..... 35
ST. PAUL, MINN.—Country home of L. W. Hill destroyed..... 150
CHICAGO, ILL.—Building occupied by the Samoline Corp..... 80
LUFKIN, TEX.—Sawmill of Martin Wagon Co..... 40
TALLAHASSEE, FLA.—Dwelling of H. C. Fleitman, 3 mi. distant... 30
GENEVA, N. Y.—Guard building, Seneca St., damaged..... 65
DALLAS, TEX.—Building of Southern Methodist University..... 25
MANVILLE, N. J.—Three new houses, Weiss Avenue..... 25

Week Ending February 28

GIBBSBORO, N. J.—Shipping building of Lucas Paint Co..... 400
BANCROFT, WIS.—Home of Ed. Sherman, 7 miles west..... 25
AVON PARK, FLA.—Property of Lakemont Packing Co., 4 miles s. 70
FORRESTON, TEX.—Building of Owen & Billery, adj. property.... 35
PROVIDENCE, R. I.—St. Joseph's Hospital..... 150
PATERSON, N. J.—Building of Rafner Furniture Co..... 160
NORTHPORT, ALA.—Plant of Warrior River Lumber Co..... 65
STONINGTON, PA.—Home of Valvin Yordy, 1 mi. south..... 25
SCHENECTADY, N. Y.—Plant of Superior Printing Co..... 25
SALT LAKE CITY, UTAH—Business property 25 Broadway..... 40
MEMPHIS, TENN.—Plant of Southern State Roofing Co..... 80
DOVER, DEL.—Reed Bldg. occupied by business concerns..... 30
WENDELL, N. C.—Wendell Hosiery Mill destroyed..... 25
PLYMOUTH, PA.—Main street business property..... 50
GRUNDY CENTER, IA.—Clyde Smith elevator destroyed..... 25
MENOMONEE, MICH.—Fuller-Goodman Co. adj. property..... 25
SANDUSKY, OHIO.—Odd Fellows Hall, adj. property..... 30
CHARLESTON, W. VA.—Store of Eisensmith Jewelry Co..... 40
PRESCOTT, ONT.—Grain elevator of Canadian Government..... 200
MODOC POINT, ORE.—Lumber yards of Lamm Lumber Co..... 250
ALBANY, N. Y.—South Pearl St. business property..... 25
NEWINGTON, GA.—Bldg. owned by T. H. Connor Co..... 40
MacDOEL, CAL.—Messick store, adj. property..... 40
ST. LOUIS, MO.—Plant of St. Louis Button Co..... 25
FORT WORTH, TEX.—Meacham's Dept. store..... 80
HAMMOND, WIS.—Hammond Lumber Co., adj. bldgs..... 25
LOUISVILLE, KY.—Dwelling of S. S. Bush destroyed..... 25
BROCKTON, MASS.—Ryder block destroyed..... 25
PAXTON, ILL.—Papineau bldg. destroyed..... 30
BRISTOL, R. I.—Lung homestead, Poppasquash Rd..... 25
BAIE DE SHAWININGAN, QUE.—Church of Sacred Heart..... 40
CROSS LAKE, MAN. CAN.—Cross Lake Indian School..... 175
FORT SMITH, ARK.—Bldg. occupied by Southern Millinery Co.... 25
BROOKLYN, N. Y.—Business bldg. 302 Penn St. damaged..... 40
CRESTLINE, OHIO.—Foundry of Schill Bros. Co. destroyed..... 150
NEW YORK, N. Y.—Garage of U. S. Trucking Corp..... 400

Chief Meador of Roanoke Dead

Carper C. Meador, head of the Fire Department of Roanoke, Va., for the past twelve years, died as the result of pneumonia at the age of forty-five. He became ill while at his office and went home. From then on his condition became worse, and he died one week later.

He was born near Hardy, Va., on October 18, 1884. In the spring of 1904 he came to Roanoke and joined the Fire Department on March 5, 1905. He served as a private, and later advanced to the posts of lieutenant and captain. Mr. Meador was elected head of the department in June, 1918, just after the first piece of motorized fire apparatus was purchased for the city.

Under his leadership the department has grown from a mere handful of men to almost one hundred. Many fire stations have also been erected and placed in service.

Chief Meador is survived by his widow and two children. He is also survived by his father and four brothers.

He was well known in fire department circles and was a member of the International Association of Fire Chiefs.

W. M. Mullins, has been appointed the new head of the fire department by the city council.

Hughesville, Pa., Firemen Want Pumper—Firemen of Hughesville, Pa., are trying to acquire a new pumper.

Austin, Tex., to Erect Drill Tower—Bids have been opened in Austin, Tex., for the erection of a drill tower. It will be of brick and fourteen feet square.

Syosset Orders Ladder Truck—Syosset, N. Y., has placed an order for a Maxim city service truck with the Woodhouse Manufacturing Company.

Little Rock Has New Apparatus—Four pieces of fire apparatus have been delivered to Little Rock, Ark., leaving three pieces of the original order to be delivered—a pumper and two service trucks. The purchase was financed by a bond issue that was authorized last fall. Tentative plans are now being drawn for a fire station.

WESTCHESTER CHIEFS DISCUSS LIGHTS FOR FIRE ALARM BOXES

Meeting of Emergency Plan at Port Chester, Favors Amber Colored Lights to Indicate Boxes — Good Attendance

AN interesting discusion on the subject of the most advantageous color for lights indicating fire alarm signal boxes was a feature of the regular meeting of the Westchester County Fire Chiefs' Emergency Plan, held at Fire Headquarters, Port Chester, N. Y., on Wednesday, February 19, at 8 p. m. The plan is an organization of the chiefs of Westchester County, formed for mutual aid, cooperation and improvement, and includes in its membership some fifty-eight officers, representing the majority of the cities and towns of the county.

The meeting was opened by the President, Chief George S. Towle, of Larchmont, and the members were welcomed by Mayor Halsey J. Munson, of Port Chester, and by Chief George Birkett, of the city.

Chief Howard A. Griffen, of White Plains, spoke on the color of lights indicating fire alarm boxes. He said that the red heretofore associated with these boxes was confusing and interfered with traffic, being often mistaken for the stop lights at street intersections. He said a representative of the Westchester Lighting Company was present to demonan amber light and the Chair called upon Mr. Palmer of the lighting company to show the globes.

The globes as shown were painted an amber tint, and Mr. Palmer said they were an exact counterpart of the lights as adopted for fire alarm boxes in New York City. However, when an ordinary mazda lamp was placed inside of the globe used in demonstration, the light showed a decided pink. It was remarked by some of the chiefs present who had seen the New York lights that these showed an amber light, quite different to the one shown. It was finally decided to leave the matter in the hands of the committee and the lighting company, to report back to the Plan at its next meeting. The committee is composed of Chiefs Griffen, Lemon and Travers. A vote of thanks was tendered to Mr. Palmer for his trouble in the matter.

Chief J. J. Mulcahey, of Yonkers, spoke on the subject of the standardization of threads for hydrants, nozzles and fixtures. He emphasized the necessity for uniformity in this matter throughout the county, as, without some plan of standardization, attempts at mutual assistance was of little avail. Chief Travers also spoke on the subject. A full report by the committee on standardization was expected at the next meeting.

Chief Lounsbury, of Greenwich, Conn., extended an invitation to the Plan to meet in his city on March 19, and it was voted to accept the invitation. A letter of sympathy was sent to Chief Gibson for his injury by an accident to his car, while answering an alarm.

After the meeting the members were the guests of Chief Birkett at a clam chowder supper.

Those present at the meeting were:

Hon. Halsey J. Munson, Mayor of Portchester (new member)
Chief Charles Matthes, Briarcliff Manor
Ex-Chief Rudolf Goettel, Eastchester
Ex-Chief Harry P. Doll, Eastchester
Chief Ed. Barth, Elmsford
Chief James Sullivan, Greenwich, Conn.
Chief Clifton Jones, Hartsdale
Chief Charles H. Perechke, Mamaroneck
Chief Carl Scheuber, Montrose
Chief Walter Jones, New Rochelle
J. M. Spader, New York City
Andy Bell, Supt. of Fire Alarm, Portchester
Chief George S. Towle, Larchmont
Lieut. Eugene Riviere, Secretary, Larchmont
Deputy Chief Peterson, Larchmont
Chief D. Wiley Travers, Peekskill
Deputy Chief McGuire, Peekskill
Chief George Birkett, Portchester
1st Asst. Chief Fred Lounsbury, Portchester
Capt. Dawkins, Portchester
Chief J. Edw. Odell, Rye
Asst. Chief Frank Lambert, Peekskill
Chief Abbot Grifen, White Plains
Chief James J. Mulcahey, Yonkers
Robert H. Lockwood, Editor FIRE ENGINEERING, New York City.
New members, Peekskill, N. Y.: 1st Lieut. F. C. Kurzhals, Hook & Ladder, Capt. Ellsworth McChain, Hook & Ladder, Capt. Wm. Cothern, 1st Lieut. George Jessup. 2nd Lieut. David Gross, Capt. Richard Olson, 1st Lieut. Frank E. Brown, 2nd Lieut. Robert L. Haring, Capt. John Brennan, 1st Lieut. Warren Lessler.

Improvements Urged for Sacramento, Cal.—Chief M. J. Dunphy of Sacramento, Cal., has recommended the installation of a manually operated fire alarm system with twelve new fire alarm boxes.

Massachusetts Chiefs' Club Meets

The regular monthly luncheon and meeting of the Fire Chiefs' Club of Massachusetts was held in the Parker House, Boston, on February 19.

Chief Selden R. Allen, of Brookline, president of the club, directed the proceedings. Seated at the head table were Chief Daniel F. Sennott, of Boston; Chief Frank E. Tracy, of Woburn; Chief John W. O'Hearn, of Watertown; Senator Joseph J. Mulhern, of Boston; Theodore A. Glynn, ex-Fire Commissioner of Boston; Ex-Chief Burt R. Jaquith, of Randolph; Mr. Ollendorf, of the state fire prevention committee; Chief Lawrence E. Reif, of New Haven, Conn.; George F. Cobb, of Boston, traffic manager, N. E. A. F. C.; and Chief Alfred J. Koltonski, of Rutland, Vt.

Chief Joseph A. Cribby, of Somerville, was elected to membership. Announcement was made that the April meeting will be held in Worcester.

The club voted to endorse the legislative bill for automatic shut-off valves on gas meters and to endorse the recommendations of the state fire prevention committee which have been embodied in House Bill 1060 which is now pending in the Massachusetts legislature.

There was discussion on various subjects including the response of apparatus to calls for aid from nearby towns and the responsibility in such cases where damage occurs to apparatus or injury to men.

Among the chiefs from outside the state attending the meeting were Chief Charles H. French, of Manchester, N. H., Chief Victor H. Veit, of Stamford, Conn.; Chief Charles E. Fortin, of Lewiston, Me.; Chief John A. Savage, of Valley Falls, R. I.; Chief Eugene P. Ricker, of Biddeford, Me.; Chief John S. Pachl, of the Annex Fire Department, Conn.; Chief Reif, of New Haven; Chief Carl D. Stockwell, of Burlington, Vt.; and Chief Koltonski, of Rutland, Vt. A welcome was extended to Fire Commissioner Willard W. Estabrook, of Brookline, who was at the meeting following a severe illness which kept him away from previous meetings during the fall and winter. The principal speakers were Senator Mulhern, Mr. Glynn, and Mr. Ollendorf.

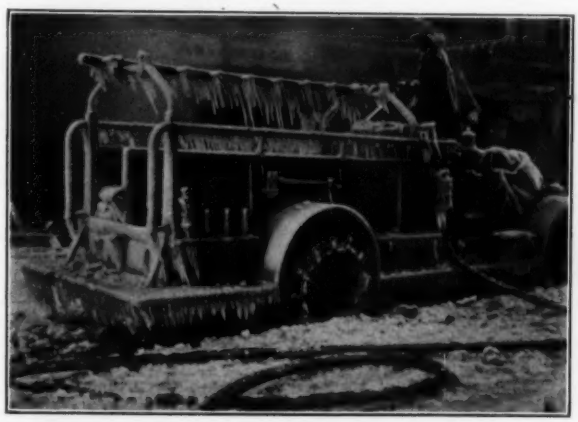
Chief Sennott, of Boston; Chief Casey, of Cambridge; Chief Clark, of Attleboro; Chief Tierney, of Arlington; and Chief Johnson, of Waltham, were among those who spoke briefly on various topics. The Board of Directors and State Vice-Presidents of the New England Association of Fire Chiefs were guests at the luncheon and meeting.

HARRY BELKNAP.

Yreka, Cal., Improvements Urged—Yreka, Cal., may issue $26,000 bonds to finance fire department improvements.

Assistant Chief Haid, of Youngstown, Resigns—After thirty-nine years of service, Assistant Chief John C. Haid, of Youngstown, Ohio, has submitted his resignation.

Chief Dodd Teaches Portland Firemen—Samuel H. Dodd, dean of the Los Angeles Fire College, will conduct a sample fire college in Portland, Ore., March 8-10. The fire bureau is considering starting a school for officers and men.



It May Appear Beautiful, But It Was Far From Pleasant

A three-alarm fire at Rockaway Park, Queens, caused damage estimated at $200,000. Apparatus was completely covered wtih ice, and even the firemen's coats and helmets were coated.

New Type Water Tower Tested in N. Y.

New York City's new water tower, an American La France-Foamite product "showed-off" on February 21st to city officials and a throng of admiring Gothamites gathered at the City Hall and later at the Battery. The tower performed for nearly an hour for the entertainment of 15,000 persons out for their noon-day luncheon in the park.

The new tower, costing approximately $20,000, is now in service in the Jay street headquarters of the Borough of Brooklyn. At the Battery Park sea-wall the tower's four pipes were used. The top nozzle is sixty-five feet from the ground. The mid-mast nozzle and the two deck pipes were used for the edification of the movie-tone cameras. Commissioner Dorman made a speech. The pressure reached a

The Background Indicates the Motive for the Purchase

A new type of water tower was tested in New York City, and will be used to protect the city's tall buildings. The turret nozzle of the fireboat "Thomas Willett" is shown in the foreground.

maximum of 150 pounds at which the tower's safety valve is set to automatically act.

The tower weighs 24,000 pounds, can travel at forty-two miles an hour and is of the hydraulic-lift type, raising at eighty pounds. The test was observed by Assistant Chiefs Martin and Dougherty, Deputy Chiefs McElligott, Heffernan and Marshall, Capt. Herman Kuch and scores of other officers of the department, as well as officials of the apparatus company. The new tower has a tiller-wheel on the rear axle and extension tormentors from the chassis at a point where the tower-mast turns.

The new tower was part of a combination order for $131,675 to the American La France Company for six pumpers, four aerial trucks and the tower, all to the lowest bidder in conformity with New York City regulations of law.

Water for the tower was supplied by the fireboat "Thomas Willett," which was damaged slightly in fighting the blaze

After the Water Tower Test Was Over

The fireboat is in the background. The seven controlling wheels can be see on the water tower, and at the near side, two of the four tormenters that slide out to brace the tower when it is in use.

that sank the trans-Atlantic liner "Muenchen." In the photographs the flag of the fireboat is shown flying at half-mast to honor the memory of Pilot Harvey, who was blown over into the river and drowned, while at this blaze.

The police had a most difficult time in keeping back the large crowd of office workers who were attracted to the water tower test.

NEW YORK CITY ISSUES FIRE DEPARTMENT FIGURES FOR 1929

Greatest Number of Fires in Brownsville Section of Brooklyn—Per Capita Fire Loss Is $2.80 — Property Valuations Increase

By WM. JEROME DALY

THE statistical report of the Bureau of Fire, New York Fire Department, for the year 1929 has been completed by George Lynch, statistician in the office of the Chief of Department and forwarded to Fire Commissioner John J. Dorman to be incorporated in the annual report of the department for the year 1929, soon to go to press. It shows that last year there were 40,121 alarms of fire, an increase of 7,022 over 1928; false and unnecessary alarms amounted to 10,398, an increase of 3,248; actual fires totalled 29,723, an increase of 3,774; fires in buildings 17,144, an increase of 1,805; fires in vessels 181, an increase of 33; and miscellaneous fires 12,398, an increase of 1,936.

The statistical report indicates that losses by fire last year amounted to $16,944,030, an increase of $369,649 over 1928, in the boroughs of Bronx and Richmond only—the other boroughs showing a decrease.

The record indicates an assessed valuation of property in the city of $17,134,017,310 for the year, an increase of $1,288,304,861; also an increase of 46,782 in population or a total of 6,064,484; an increase of 34,907 buildings or a total of 637,527.

The only item in the report that does not show some sort of fluctuation is the area of the city—201,446 acres or 314.75 square miles.

Of the 29,723 fires 91 percent or 27,044 were confined to the point of origin, an increase of 3,998 over 1928; 479 fires extended to other buildings, an increase of 84; 5,213 fires occurred between 6 a. m. and noon; 10,869 occurred between noon and 6 p. m.; 9,789 occurred between 6 p. m. and midnight and 3,852 occurred between midnight and 6 a. m.

Of the 40,121 alarms received, 29,723 were for actual fires; 2,343 were unnecessary and 8,055 were false, an increase of 3,017 over the year 1928. Of the 8,055 false alarms, 7,598 were sent in from street boxes, an increase of 2,987 over the year previous. This in great measure is due to the extension of the spade-handle-single-action-door type of box which has proven very convenient for the malicious false alarm fiend.

New York fire fighters threw 103,873,733 gallons of salt and fresh water on fires last year, an increase of 17,862,243 over the year 1928.

The loss in New York last year averaged $2.80 per capita, an increase of four cents per capita over the year 1928. The losses by boroughs indicate decreases in Manhattan, Brooklyn and Queens and increases in the Bronx and in Richmond, as follows:

Borough	1929	Increase
Manhattan	$ 6,246,455	$747,515d
Bronx	2,540,010	830,980
Richmond	965,590	683,824
Brooklyn	5,404,085	390,325d
Queens	1,837,890	7,315d
Total	16,994,030	$369,649

Under the heading of classification of buildings in which fires occurred last year, there is an indicated increase of 35 fires or fifty per cent over 1928 in clubs, dance halls and lodge rooms; tenement houses as usual lead the list with 7,677 fires, an increase of 576 for the year. Of the 7,677 fires in tenements the cellar holds stellar position with 2,107 as the point of origin and 1,941 originated on the first or ground floor, due principally to the presence of stores. There were 1,271 fires in kitchens of tenement houses.

The Brownsville section of Brooklyn (44th battalion) again leads with the greater number of fires for the year, a total of 1,360, an increase of 54 over the year 1928; the 15th battalion district in the northern extremities of the Bronx is next with 1,332 fires; the 50th battalion district in the heart of Jamaica is third in the list with 1,176 fires; the 12th battalion district in Harlem had 1,158 fires; the 41st battalion in Flatbush had 1,157 fires; the 18th battalion in Fordham had 1,041 fires; the 20th battalion in the mid-east Bronx had 1,023 fires; the 9th battalion in the theatrical

and hotel district had 953 fires; the 11th battalion in the mid-west Manhattan section had 948 fires; the 10th battalion in the Yorkville section had 941 fires; the 16th battalion in Harlem's colored neighborhood had 880 fires; the 17th battalion in the centrally populated part of the Bronx had 876 fires, the 4th battalion in the Ghetto of old Manhattan had 868 fires and the 35th battalion in the central part of Brooklyn had 831 fires for the year.

Boston Firemen Enjoy Annual Ball

The fifty-first annual ball of the Boston Fire and Protective Departments was held in Mechanics' Hall on Huntington Avenue, Boston, Mass., on the night of February 13.

The reception committee was composed of Acting Fire Commissioner Eugene C. Hultman, Chief Daniel F. Sennott, Supt. Peter E. Walsh, of the Boston Protective Department; Lieut. Fred J. Dobbratz, Capt. John H. Leary, District Chief Joseph W. Shea, Capt. William J. Mahoney, James J. Higgins, Edward J. C. Powers, Lieut. M. J. Gleason, James F. McFadden, and Dr. William J. McNally.

There was a concert from 8 to 9, grand march at 9, and dancing from 9:30 to 1.

Shortly after the grand march had been finished Commissioner Hultman and Chief Sennott left the hall to go to a third alarm fire in the repair shops of the Boston Elevated Railway on Harrison Avenue.

The ball was largely attended in spite of the rainy weather that prevailed. The proceeds were, as usual, devoted to the Boston Firemen's Relief Fund.

HARRY BELKNAP.

Use of Gas Masks in Germany

Gas masks are used widely in Germany by fire departments and the industries, but not yet in mines, according to S. H. Katz, who made a study of the use of gas masks abroad for the United States Bureau of Mines, Department of Commerce. Fire departments especially are well equipped, and nearly every fireman in Germany has a mask. The most popular mask is based on the German army mask used during the World War. It has a leather facepiece and a drum-shaped canister attached so as to allow changing the canisters. The headbands are of fabric with small spiral metal springs inclosed for elastics. Facepieces are also made of rubber and of rubberized fabric.

The mask forms a pocket over the wearer's face, and he breathes through his nose. There are no valves; both the inspired and expired air pass through the canister and filtering materials. Disks of gelatin to absorb moisture and prevent fogging are placed inside the eyepieces; these are changeable.

The drum canisters are made with absorbents in considerable variety for specific gases and classes of gases; moreover, a general purpose canister especially for fire departments restrains all classes of poisonous gases and smokes but carbon monoxide. The relatively small canister has a limited capacity and is intended for protection only where there is an abundance of fresh air to dilute greatly the gases from a fire or from any other source. The filter in this canister is effective only against relatively coarse suspensoids, as the canister is made with little resistance to breathing because the wearer must both inhale and exhale through it, which doubles the work imposed by the resistance in the canister. When greater filtering efficiency is needed for smokes or other suspensoids an additional filter disk of higher filtering efficacy may be clamped over the outer end of the canister by means of a special fitting of perforated metal.

Canisters of larger size and capacity are also made. They are supported by a harness on the wearer's body, usually on the left side or back, and a corrugated rubber tube leads from the canister to the facepiece. The facepieces are the same or smaller than those heretofore mentioned. An exhalation valve is included in the fitting attached between the facepiece and rubber tube, and valves to prevent back flow are also included in the canister at the upper or outgoing side.

Descriptions of the various types of gas masks used in Germany, England, France and Belgium are given in Information Circular 6206, issued by the United States Bureau of Mines, Department of Commerce, Washington, D. C.

Dayton, Wash., to Buy Apparatus—The council of Dayton, Wash., voted to purchase fire department apparatus.

Newton Falls, Ohio to Buy Pumper—Bonds will be sold in Newton Falls, Ohio, to finance the purchase of a pumper.

Falmouth Votes for Two Fire Houses—Falmouth, Mass., has appropriated $10,000 for a fire station to be erected in West Falmouth and $16,000 for another to be erected in East Falmouth.

Providence Firemen Rescue Horse

A resident of Providence, R. I., who drove his horse to the stable had the pleasure of seeing the animal suddenly disappear from view. It fell through an open trapdoor into the cellar ten feet below.

Some kind friend suggested, "Call the police."

"Don't you do it," said another, "they'll only shoot the horse. And besides you'll still have the horse in the cellar."

A ladder company was called. When they came the men found a hungry horse in the cellar. The men balked at first and said that horses were just a little out of their line. But with the aid of a block and fall hitched to the beams of the barn, the six firemen pulled for about an hour, and finally succeeded in raising the animal.

New Fire Station Opened in Wichita

An attractive, and very well equipped fire station has been placed in service in Wichita, Kans. It was designed and constructed under the supervision of Assistant Chief Doc Wendel, and much credit is also due to Chief H. H. McCall.

The house is said to represent the last word in fire engine quarters, both as to efficiency and for the comfort of the men assigned to the station. The building is of joisted brick construction with limestone trimmings. It has many windows so that the various rooms are well ventilated and subjected to plenty of daylight.

Two pieces of Ahrens-Fox apparatus are housed in the building. The apparatus, delivered recently, were tested and

New Fire Station Opened in Wichita, Kans.

far exceeded the stipulated requirements. In the photograph, at the right, is the ladder truck, and the pumper is stationed at the left.

Report Issued on Boston Fire Losses

A very comprehensive report, consisting of 312 pages bound in cloth, has been issued on the Problem of Fire Waste and Insurance Rates in the City of Boston by the Mayor's Committee on Fire Insurance Rates with the assistance of the Albert Russel Erskine Bureau of Harvard University and the Field Engineering Department of the National Fire Protection Association.

The report gives a general review of conditions, the fire insurance rates in Boston; combustible material found in the city, the effect of building laws on structural conditions, the fire record, study of the fire department, fire prevention laws, a technical analysis of the fire prevention laws and regulations applying in Boston, and so forth. There are appendices on structural conditions, fire record tabulations, tabulations relating to fires in buildings, miscellaneous fires and alarms, arson laws, the fire prevention law, a digest of Massachusetts laws relative to fire prevention and protection, and an organization plan for a fire prevention committee.

The report contains a large number of graphs, charts and half tone illustrations. It is indicative of the large amount of study that was given to the problem before the findings were published.

Buzztown, Pa., to Have Fire Company—A fire company will be formed in Buzztown, Pa.

Pumper Tested in Sioux City, Ia.—A 1,000-gallon pumper has passed its official test in Sioux City, Ia. It was purchased for $13,000.

New District Chief in Boston

Announcement was made on February 25 of the promotion of Captain Samuel J. Pope, of Ladder Company No. 1, of the Boston Fire Department, to rank of district chief.

He was appointed to the department of February 24, 1913, and was telegrapher and aid to the late District Chief Edward J. Shallow prior to being made a lieutenant. He became a captain on August 22, 1927. His home is at 57 Washington Street, Charlestown, and he is one of the most popular officers in the Boston Fire Department.

HARRY BELKNAP.

Alfred E. Smith Reviews Volunteers

Former Governor Alfred E. Smith and officials of the Borough of Brooklyn, New York City, reviewed the annual parade of the Kings County Volunteer Firemen's Association

Honorary Marshal "Bill" Todd Leading Parade of Volunteers

on Washington's Birthday. Fire companies were present from Westchester County, Long Island, New Jersey, and Delaware. One authority estimated that there were 5,000 persons in the line of march.

William H. Todd, head of the Todd Shipyard Corporation and honorary deputy chief of the association, and Deputy Chief Charles Jannicky led the march.

A delegation of seventy-five members of the Wilmington, Del., Volunteer Fire Department, accompanied by thirty members of the women's auxiliary, were guests of Mr. Todd in Brooklyn for the day. More than one thousand of the marchers were guests of Mr. Todd at a luncheon held at the Hotel Bossert.

Massachusetts Fire Laws Examined

A special Commission on Fire Prevention was created to investigate the rules, regulations and laws in Massachusetts pertaining to fire prevention. The committee appointed by the governor consisted of William W. Ollendorff, West Medway, Chairman; John D. Shuart, Springfield; Peter E. Walsh, Boston, and Russell S. Codman, Jr., Boston.

The commission held public hearings in Boston, Worcester, Springfield and Pittsfield, and it also met with the Massachusetts Fire Chiefs' Association.

The commission was solely concerned with prevention and the laws that related to it. It devoted its attention to facts rather than to figures.

Initial examination of the fire laws impressed the commission with the fact that they are in a chaotic condition. Later, at the public hearings which the body arranged, the commission time after time was informed by local fire chiefs, and by other officials that the phraseology of some of the statutes in regard to enforcement is so ambiguous that it is impossible for either the representatives of the state or of the municipalities to determine who should act. It was also found that some sections of the laws were complex and exceedingly difficult to understand.

In accordance with the new provisions, obsolete oil laws are changed into up-to-date effective statutes. Careless throwing of lighted cigarettes and cigar stubs is penalized, for this item alone has been found responsible for many fires. Existing laws on fireworks and bombs are tightened so as to reduce the danger of fires from these sources.

In addition, the commission recommended legislation providing for the creation of a Board of Fire Prevention Regulations; for the employment by municipalities of wire inspectors to prevent the installation of defective wiring; for a stricter law governing setting of fires in the open, and for the regulation of open-parking enclosures by municipalities desiring to do so. The commission recommended the enactment of a uniform fire law applying all over the state instead of the present code.

The report has been printed as No. 1060, and consists of seventy pages. In the printed report are many of the suggested measures.

Owner Liable for Neglecting Hazards

The Supreme Court of Ohio has just affirmed a decision of the Appellate Court of Cuyahoga County, that accentuates the liability of the property owner for damages caused a tenant. The Court said:

"That if an owner of a building is negligent of fire hazards, and his tenants suffer fire losses because of such negligency, the tenant has the right to recover damages from the property owner."

Fire preventionists are well pleased with the decision as it stresses the point that it is far cheaper to eliminate fire hazards than to pay damages because of them.

Del-Mar-Va Firemen to Meet

Plans have been made for the first annual convention of the Del-Mar-Va Volunteer Firemen's Association to be held in Cambridge, Md., Wednesday, May 14. The association consists of firemen residing in two counties of Delaware, nine counties of the eastern shore of Maryland and two counties of the eastern shore of Virginia. The meeting will be held in the afternoon, and it is expected that Chief Ross B. Davis, of Philadelphia, will give one of the talks.

A parade has been arranged to take place at 6 p.m. Invitations have been sent out to about one hundred companies. The President of the association is Chief George W. Colborn, Jr., Princess Anne, Md., and the Secretary, J. Emory Parks, Cambridge, Md.

Wants All Apparatus to Carry Gas Masks

A bill has been introduced in the Massachusetts State Legislature that provides that every piece of fire apparatus in the state must be equipped with two gas masks.

A fire occurred recently in Cambridge, Mass., resulting in the death of one fireman from gas and fumes because apparatus of that city is not furnished with gas masks. It was this incident that prompted the preparation of the bill.

ELWIN BECKWITH.

Pittsfield Lions Hear Fire Alarm Talk—Charles S. Chapmen, of the Gamewell Company, gave a talk on fire alarm systems to members of the Lions Club, Pittsfield, Mass.

Fire Department Prevents Shingle Roof Conflagration

The fire department of Winnipeg, Man., Canada, made a good stop at a fire that broke out at Dorchester Court. A strong wind was blowing at the time and threatened to spread the fire to adjoining buildings. The roofs were of shingle construction. Only excellent work on the part of the fire department prevented a shingle roof conflagration. All tenants got out safely.

NEW ENGLAND CHIEFS TO MEET IN RUTLAND, VT., JUNE 24-27

Officers Make Plans for Coming Annual Convention—Invitations Extended to Chief Ralph J. Scott and Assistant Chief T. F. Dougherty

By HARRY BELKNAP

THE eighth annual convention of the New England Association of Fire Chiefs will be held in Rutland, Vt., on June 24, 25, 26, and 27. The exhibits will be in the armory and the meetings in Odd Fellows' Hall which is close to the Armory. Concention headquarters will be in the Hotel Berwick where the registration will take place.

A meeting of the Board of Directors and State Vice-Presidents was held in the Parker House, Boston, on February 19. Those attending were:

Chief Lawrence E. Reif, New Haven, Conn., President.
Chief Selden R. Allen, Brookline, Mass., First Vice-President.
Chief John W. O'Hearn, Watertown, Mass., Secretary-Treasurer.
Chief Carl D. Stockwell, Burlington, Vt., State Vice-President.
Chief Alfred Koltonski, Rutland, Vt., Director.
Chief John S. Pachl, Annex Fire Department, New Haven, Conn., Director.
Chief Victor H. Velt, Stamford, Conn., State Vice-President.
Chief James M. Casey, Cambridge, Mass., Director.
Chief Charles E. Fortin, Lewiston, Me., State Vice-President.
Chief John A. Savage, Valley Falls, R. I., State Vice-President.
George F. Cobb, Boston, Traffic Manager.
Harry Belknap, Boston, Press Representative.
P. Hildreth Parker, Belmont, Mass., Registrar.
Herbert K. Pratt, Bridgewater, Mass., Registrar.
George W. Austin, Boston, Registrar.

Commissioner Harry J. Harding and Chief Thomas J. McCarrick, of Revere, Mass.; and Chief Charles L. McCarthy, of Worcester, Mass., were guests at the meeting.

Plans were made for holding a four-day convention, to be held June 24, 25, 26 and 27. Chief Daniel B. Tierney, of Arlington, Mass., was appointed chairman of the committtee on exhibits.

It was voted to send invitations to attend the convention to Chief Ralph Scott, of Los Angeles, Cal., President of the International Association of Fire Chiefs; and to Assistant Chief Thomas F. Dougherty, of the New York Fire Department.

Chief James M. Casey, of Cambridge; Chief Selden R. Allen, of Brookline; Chief John W. O'Hearn, of Watertown; and George F. Cobb, of Boston, were appointed as a committee on topics.

Chief Reif showed some souvenirs of the steamship Muenchen fire in New York and told of visiting the burned vessel with members of the Board of Directors of the International Association of Fire Chiefs.

Secretary O'Hearn and Traffic Manager Cobb went to Rutland on February 25 and conferred with Mayor Arthur W. Perkins and Chief Koltonski regarding the convention plans.

George F. Cobb, 774 Albany Street, Boston, Mass., is in charge of hotel arrangements and reservations should be sent to him.

Children Injured by Blast of Still

Twenty-three persons, sixteen young school children, were seriously injured by an explosion of illuminating gas from a main in Brooklyn, N. Y., tapped to operate a ten-gallon still in a building directly opposite a public school. Only the calm efforts of school teachers prevented a panic among the two thousand children in the building at the time.

The school children had been trained to respect an emergency fire alarm system which consisted of a whistle signal blown by monitors. When explosion made the regular electrically operated fire alarm gong inoperative, and it was only by the whistle that the children knew that the fire drill procedure was to be followed.

Every window in the school was shattered by the blast. In some cases even the sashes were blown out and many of the children were thrown by the force of the explosion. Even though cut and bleeding by the glass, the children formed into fire lines and marched out of the building in orderly fashion. Police reserves, ambulances and fire engines were dispatched. They found it difficult to control the excited parents who assembled.

In the basement there were girls and boys taking showers, in charge of teachers. When the explosion occurred, the children dressed quickly and were guided to the street. Due to the explosion, the doors of some rooms jammed and it was necessary to batter in the doors to free the children on the inside.

Many parents who rushed to the school shortly after the blast succeeded in finding their children and in taking them home. A number, especially those who arrived later, failed to find the ones for whom they were looking, and they added to the general confusion. Many youngsters were safe at home while a search was being made for them. Still others were removed to hospitals for treatment.

Chief Burnett Marks 35th Anniversary

Will Burnett, head of the fire department in Des Moines, Ia., celebrated his thirty fifth year in the fire service. As a gift from "the boys" he was presented with a large bowl containing thirty-five American Beauty roses, one for each of his years of service.

Looking at the roses, the chief remarked, "It's hard to realize that each one of them means I've spent a year with the department. Before they were brought in to me, I was thinking how short the thirty-five years seemed. But each rose that I look at makes me feel that's it's been a long, long time."

When he joined the Des Moines Fire Department on February 22, 1895 as assistant chief there were two stations and fifteen men. Today there are seventeen stations and 192 men in the service. Chief Burnett plainly remembers the funny little straight caps that the men wore when he first joined.

Cambridge Fireman Dead from Gas

Ladderman William McGrath of Ladder 5, Cambridge, Mass., was gassed to death, and ten fellow firemen overcome by escaping gas at a small fire. McGrath attempted to rescue several men of his company before he collapsed himself.

Councillor Delaney of the City Council, an eye-witness, described the death and injury an "outrage." He stated that a year ago an order for gas masks was introduced before the Council, and it was opposed on the grounds that they were worthless. "One man is worth a million gas masks," said Mr. Delaney.

McGrath was a member of the department for twenty-two years. He is survived by his father, a member of the department, his wife and four children.

E. BECKWITH

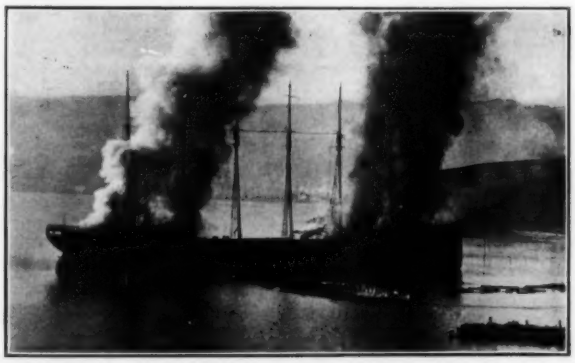
Hempstead, N. Y., to Erect Fire House—Bids have been received in Hempstead, N. Y., for the erection of a new fire house to cost about $30,000.

Buzztown, Pa., to Have Fire Company—A fire company will be formed in Buzztown, Pa.

White Horse, N. J., Raising Funds—Funds are being raised in White Horse, N. J., for the purchase of fire apparatus.

San Jose, Cal., May Buy Apparatus—San Jose, Cal., is planning to purchase fire apparatus and equipment. It is believed that both a pumper and ladder truck will be purchased.

Apparatus Delivered to Alameda, Cal.—New fire apparatus has been delivered to Alameda, Cal.



No One Attempted to Stop This Blaze

Another chapter of the romantic days of the seas was brought to a close when firemen of San Francisco drenched the decks of the City of Sydney with kerosene and set her afire. The craft was the last of the six-masted barkentines. After the torch was applied, a crowd gathered on shore to watch the fire.

South Dakota Firemen Plan School

Committees representing both the South Dakota Fire Chiefs' Association and the South Dakota Firemen's Association met in Sioux Falls to outline the program for the coming fire school sponsored by the two organizations.

The school will be held in Madison, June 23 to 27, inclusive. The first four days will be devoted to lectures and drill work, and on the last day of the school will be competitive evolutions for which $1,200 has been set aside to be awarded as prizes. No team will be eligible to enter the contests unless it has been in attendance the full four days of practice, and only towns furnishing a squad of six men will be entitled to participate in the prize money. But regardless of the number of men sent, instruction will be accorded to all.

Pyrene Announces Chicago Manager

Announcement has been made of the appointment of William O. Jennings as Chicago District Manager of the Pyrene Manufacturing Company.

William O. Jennings

He was born in 1890 and raised on a New York State farm. Mr. Jennings has seventeen years' successful experience, nine of which were in semi-executive and executive capacities. In 1912 he was with the Cyphers Company of Buffalo, N. Y. He became sales manager, and left in 1916 to become associated with the Beaver Board Companies, Buffalo, N. Y., After covering sales territory for this company for a period of three years, he was selected from a force of 218 men to manage the Philadelphia District office, the second largest of the seventeen U. S. branches.

In 1922 Mr. Jennings resigned to accept the position of Eastern Sales Manager of the U. S. Chain Forging Company. He was with this company until 1929 and during this time made a brilliant sales record.

Mr. Jennings has done considerable traveling in Europe and has a knowledge of industrial conditions there.

Evansville Fights Morning Fire

The larger portion of a business block in Evansville, Ind., was destroyed by a fire that broke out at 4:30 a.m., from what is believed to be defective wiring. Thirteen fire companies with 135 firemen pressed into rush service found the flames completely beyond control. Before any hose could be connected, the back wall collapsed, followed in a few moments by the roof. Flames swept the second and third floors, and broke through the rear of the double fire wall protecting the Cleveland Life Building. A small hose stream checked the advance of flames from that section.

The new 1,000-gallon pumper was used for the first time. Rain and snow hindered the firemen.

The building was inspected the week previous and was said to have been one of the cleanest buildings in the city. However, it was not of fireproof construction.

The damage has been estimated at $750,000. The fire is believed to be the second largest in the history of the city.

Deputy Chief Scalded at Fire

Guy Walker, Deputy Chief of Denver, Colo., was scalded on the right side and right leg when he stepped into a vat of boiling water while the department was fighting a fire in a crate and basket plant.

Lights had been turned off. Chief Walker was making his way through a dark, smoke-filled room when he stumbled into the vat used for steaming logs. He got out unassisted, and after receiving emergency treatment, was taken to the Denver General Hospital.

The blaze is believed to have started from an overheated bearing in a fan, and the damage was estimated at $1,000.

Three Alarms Sent for Hotel Fire

Good judgment on the part of officers prevented a bad fire in Sacramento, Cal., that started in the Capitol Hotel. The first alarm was received at 8:43 a. m., and brought Chief M. J. Dunphy and First Assistant Chief Hayes with Engines

Capitol Hotel Destroyed in Sacramento, Cal.

1, 2, and 5, Chemical No. 1 and Truck No. 1. Just as soon as he arrived, Chief Dumphy sent a third alarm. This brought Second Assistant Chief Mulligan, Engines 3, 4, 7, and 8, Chemicals 2 and 3, and Truck No. 2.

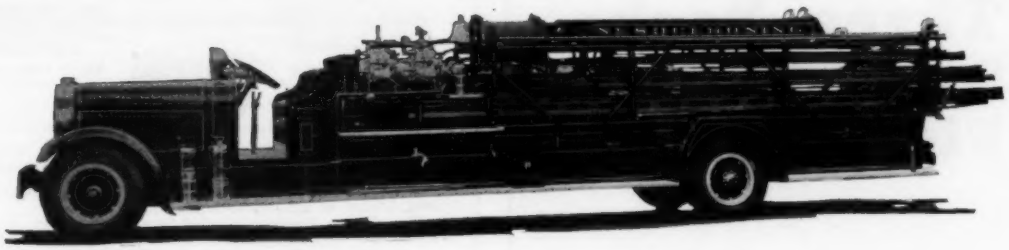
The hotel interior was completely involved and it was impossible to save the building. Streams were sent into the upper floors from the tower and turret nozzles. It was six hours before the fire was considered under control, although the loss amounted to $240,000.

Luckily the fire developed in the morning when all the guests were up. Otherwise, it is believed, there would have been some loss of life.

Eau Claire, Wis., Firemen Get Increase—All members of Eau Claire, Wis., firemen will get a pay increase of ten dollars a month, with the exception of the chief whose salary remains the same. The chief will receive $225 a month; assistant, chief, $150; firemen, first year, $120; second year, $125; third year, $130, and thereafter, $135.

Staten Island Firemen Stop Serious Fire

Fire broke out in a home that formed part of a block of frame houses on Staten Island, New York. The entire section was covered by a screen of black, heavy smoke. The firemen were succesful in preventing the flames from reaching the other frame buildings. Had the blaze gone out of control, a serious conflagration would have resulted



City Service Truck with Double Bank Ladder Equipment

HAHN chasses embody the latest features known to automotive science, viz., powerful 6-cylinder smooth running engines, 4-wheel hydraulic brakes operated through vacuum booster, full-floating heavy-duty axles, heavy-duty clutches and transmission.

HAHN Fire Equipment—pumpers, booster tanks and pumps, hose bodies, ladder equipment all bespeak *quality, dependability* and *efficiency*.

300 to 1000 gallon pumpers.

HAHN MOTOR TRUCK CORP., Allentown, Pa.

20 Years Experience Building Fire Apparatus

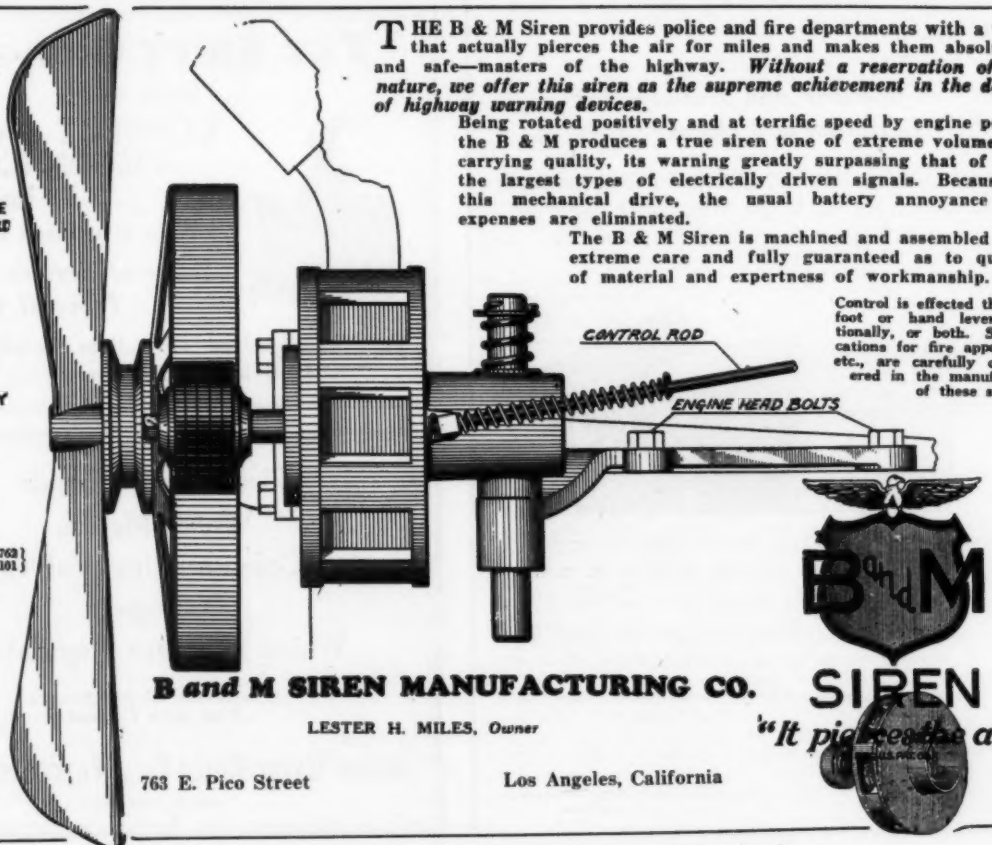
B&M FORD SIREN

MADE TO FIT THE NEW MODEL FORD

PRICE 65.00

COMPLETE WITH DRIVE PULLEY FAN AND BRACKET

PATENTS
{1,566,761 1,566,763
1,566,768 1,586,101}
Others Pending



THE B & M Siren provides police and fire departments with a voice that actually pierces the air for miles and makes them absolute—and safe—masters of the highway. *Without a reservation of any nature, we offer this siren as the supreme achievement in the design of highway warning devices.*

Being rotated positively and at terrific speed by engine power, the B & M produces a true siren tone of extreme volume and carrying quality, its warning greatly surpassing that of even the largest types of electrically driven signals. Because of this mechanical drive, the usual battery annoyance and expenses are eliminated.

The B & M Siren is machined and assembled with extreme care and fully guaranteed as to quality of material and expertness of workmanship.

Control is effected through foot or hand levers optionally, or both. Specifications for fire apparatus, etc., are carefully considered in the manufacture of these signals.

B and M SIREN MANUFACTURING CO.

LESTER H. MILES, *Owner*

763 E. Pico Street Los Angeles, California

B and M SIREN

"It pierces the air"

Three Books for Ambitious Fire-Fighters

They contain just the material that will insure your promotion and fit you for bigger work in your department.

Simplified Fire Department Hydraulics

A complete course of instructions. Contains 200 pages, over 150 problems and solutions, and other practical information. $2.15 postpaid.

Questions and Answers for Lieutenant and Captain

Contains questions asked at civil service promotion exams in practically every city, and the answers. A 290-page book at $2.65 postpaid.

Questions and Answers for Battalion and Deputy Chief

Only book published giving detailed method of operating at large fires. 210 pages of valuable information at $2.15 postpaid.

Send Your Order Today

FIRE ENGINEERING, Book Department, 225 W. 34th St., N. Y. C.

Gentlemen: Money order (or check) for $.....enclosed. Please send me the following:

.....Copies of Simplified Fire Department Hydraulics at $2.15 each.

.....Copies of Questions and Answers for Lieutenant and Captain at $2.65 each.

.....Copies of Questions and Answers for Battalion and Deputy Chief at $2.15 each.

Name .....

Address .....

Saves time - *and costly hose*

No. 1. (Capacity 3 to 7 tons; weight, each, 72 lbs.)

No. 2. (Capacity 3 to 12 tons; weight, each, 118 lbs.)

Complete information and Prices on request.

It's often necessary to move apparatus at a fire. Automobile traffic hates to be held up by a line of hose stretched across the right of way.

Why ruin your hose by driving over it? Or waste valuable time cutting off and disconnecting?

The Wausau Protector is a big time and money saver—easy to handle and carry. Order a set today, or write us for particulars.

Wausau Fire Hose Protector Co.

1520 Harmon Place, Minneapolis, Minn.

LARKIN Fire Department Supplies

in Service Wherever Fires Are Fought

Our general line of equipment includes every fire department supply of merit.

Larkin shut off nozzles alone are in service in over 5,000 fire departments in U. S. and Canada.

Give us an opportunity of quoting on your next requirements. Let us send you our general catalog.

THE LARKIN MANUFACTURING CO.

Established 1898 **DAYTON, OHIO**

THE SHIFT COUPLER

Built to

CONNECT and DISCONNECT instantly!

Any size hard suction

Years of Service Prove it the Best

National Standard Threadless Coupling Corp.

215-217 Beach 122 St., Rockaway Park, N. Y.

Fire Alarm Signals

Water Meters

Compounding Valves

Stops

Water Pressure Regulators

Presses for Lining Service Pipe with Cement

Union Water Meter Co., Worcester, Mass.

Incorporated 1868

FIRE DEPARTMENT ACTIVITIES

Station Completed at Murray, Utah—A new fire station has been completed in Murray, Utah.

White Plains to Reconstruct Houses—Two of the fire houses in White Plains, N. Y., are to be reconstructed.

Piketon O., to Receive Apparatus—Piketon, Ohio, has voted to purchase fire apparatus.

Rochester, Minn., May Have New House—Rochester, Minn., is considering the construction of a new fire station.

Le Roy, N. Y., Considers New Apparatus—Le Roy, N. Y., is considering the purchase of new fire apparatus.

Los Angeles to Erect Another Station—A fire station will be erected at Baldwin Park, Los Angeles, Cal.

Westfield, Mass., to Buy Ladder—Westfield, Mass., is to purchase a 75-foot aerial ladder truck.

North Attleboro, Mass., Has New Station—A central fire station has been opened in North Attleboro, Mass.

New House Recommended for Mansfield, Mass.—Chief Arthur E. Soper of Mansfield, Mass., has recommended that the town consider the erection of a new fire station.

Herkimer, N. Y., Considers New Station—Plans are being considered for a new fire station for Herkimer, N. Y. Such a move has been considered for a number of years.

Fire House Opened in Memphis, Tenn.—A new fire station has been placed in service in Memphis, Tenn. Refreshments were served after the dedication ceremonies.

Suffern, N. Y., May Purchase Apparatus—Suffern, N. Y., is considering the purchase of fire apparatus. The matter is to be placed before the residents at the spring elections.

Apparatus Damaged by Street Car—A street car collided with a parked fire apparatus in Sioux City, Ia. The damage was only slight.

Seattle to Erect Fire Station—Bids will be invited soon for the erection of a fire station in Seattle, Wash, to cost $56,000. Plans for the station have been approved.

Four-County Association Planning Convention—Plans are being made by the Four County Firemen's Association for the annual convention to be held in Easton, June 20-21.

Hellertown, Pa., Wants Fire Alarm—Property owners in Hellertown, Pa., are urging that a fire alarm system be installed in the borough.

Oroville, Cal., to Have New Fire Alarm—Oroville, Cal., is to have a new fire alarm system costing $21,000. The contract was awarded to the Gamewell Company.

Pueblo, Co., Has Low Fire Loss—The per capita fire loss in Pueblo, Col., for the past year has been 58.5 cents while the average for the country has been $3.93.

Hollywood, Cal., to Have Fire Station—A permit has been granted for the construction of a fire station in Hollywood, Cal.

Better Protection Urged for Lakeside, O.—A meeting was held to discuss better fire protection for Lakeside, Ohio, a community consisting of seven hundred cottages.

Wants N. Adams, Mass., Fire Alarm Extended—James P. Rand, Inspector of Wires in North Adams, Mass., has recommended that the fire alarm system be extended.

Baltimore to Have New Stations—The Fire Board of Baltimore, Md., is considering the construction of several new fire houses to be financed from the $4,000,000 public building loan.

Lansing, Mich., to Have New Fire Station—Funds have been provided for the erection of a new fire station in Lansing, Mich., this spring. It is believed that work will start March 1.

Odebolt, Ia., May Buy Apparatus—Odebolt, Ia., is considering the purchase of apparatus for the protection of rural property. About $6,500 is needed and half of the amount has been subscribed.

Anniston, Ala., Buys Apparatus—Two new pieces of apparatus have been purchased by Anniston, Ala., and early delivery is expected. Taking in the trade value, the city is to pay $11,000.

Milroy, Ind., to Charge for Apparatus—Non-members of the Fire Association of Milroy, Ind., will be charged fifty dollars per run for the use of the fire apparatus and the services of the firemen.

San Antonio, Tex., Working on Station—Construction has started on a new fire station for Terril Hills, the second one to be constructed in annexed surburbs of San Antonio, Tex. It will be a combination police and fire station.

New Boxes Placed in Santa Barbara—Fifty-eix new fire alarm boxes have been placed in Santa Barbara, Cal. Work on the new fire alarm system was started in October and the system will cost $29,000.

Missouri Organizes to Fight Hazard—Upon the request of Governor H. S. Caulfield, fire companies are being organized in all state institutions in Missouri and a chief is to be appointed. All of the chiefs so selected will be sent to St. Joseph for a four weeks course of training.

Station Opened in Syracuse, N. Y.—A fire station has been opened in Syracuse, N. Y. Ten men were transferred from other companies to man the new house. Litigation has held up the proposed purchase of two additional pumpers and a combination truck and pumper.

Los Angeles Orders Apparatus—Three orders for fire apparatus have been placed by Los Angeles, Cal., with the Pacific Fire Extinguisher Company, the White Motor Truck Company and the Seagrave Corporation. The total cost will be $67,125.

Chief Galley Starts Fortieth Year of Service—Bert J. Galley, Chief of Columbus, Neb., has now started his fortieth year of service and his twenty-eighth year as chief. He is believed to be the oldest chief in Nebraska. During the past year forty-eight alarms were received and the total loss was $7,838.

New Fire Alarm Asked for Paterson, N. J.—Daniel F. Moore, Fire Alarm Superintendent of Paterson, N. J., has stated that the city had outgrown its present fire alarm system and suggested a new system to be installed. A similar move has been suggested by the local Chamber of Commerce.

Boston Considers Consolidation of Houses—Mayor Curley of Boston has asked that the city consider further the consolidation of fire houses particularly with a view of doing away with many old buildings. The Mayor said that an amount of about $300,000 could be spent annually for a period of years on new fire stations.

Apparatus Damaged in Car Crash—Firemen narrowly escaped injury when the apparatus on the way to a fire crashed into an automobile that had stopped in the center of the road. The driver applied his brakes to prevent a collision, but the apparatus skidded completely around. Three ladders on the apparatus were demolished, a running board smashed, and an extinguisher damaged.

California Foresters to Order More Trucks—Four rural fire trucks operated by the Forestry Department of California are credited with saving property valued at $400,000 during the past fire season. M. B. Pratt, State Forester, will attempt to secure two large and two small trucks to be used for fire protection in Northern California, and three trucks would be used in the southern part of the state.

West New York Has Low Record

Ernest G. Beckert, Chief of the Fire Department at West New York, N. J., has just issued his annual report showing a remarkable reduction in fire losses. For the past year the total value of property involved at fires has been $213,000, and the total fire loss on both buildings and contents has been but $9,779.50. This fire loss has been the lowest since the paid department was instituted.

Chief Beckert credits a large measure of this remarkable figure to the splendid cooperation of the general public in following suggestions of fire department inspectors for abolishing all unnecesary accumulation of rubbish and doing away with fire hazards.

In the report there was a recommendation that fifteen men be added to the fire department, and that all drivers of cars and apparatus in the department be insured against liability for accidents while on duty.

PROPOSED IMPROVEMENTS

Eureka, Humboldt Co., Calif.—Reports state committees from various fire companies of city fire department discussed question of installing motorized fire apparatus in outlying fire stations.

Middletown, Middlesex Co., Conn.—A new pumper may be purchased for the fire department. Geo. S. Pitt, Chief.

Falls City, Richardson Co., Nebr.—City Council considering purchase of new piece of apparatus for the fire department.

Stony Point, Rockland Co., N. Y.—Purchase of new fire apparatus for the local department is being considered, according to reports.

Wappingers Falls, Dutchess Co., N. Y.—New fire station is to be erected for the S. W. Johnson Engine Co. at cost of $15,000.

Canton, St. Lawrence Co., N. Y.—Borough Council has authorized the holding of an election to vote on a bond issue to the amount of $8,000 for purchase of pumper and hose for fire department, according to reports.

Chalfont, Bucks Co., Penn.—Plans for fire station were adopted by fire department.

Appleton, Outagamie Co., Wis.—Rural districts surrounding city planning to form a fire district according to reports.

Omak, Okanogan Co., Wash.—Bonds to the amount of $20,000 are being issued for erection of city hall and fire station.

Montgoemry, Lycoming Co., Penn.—Borough Council considering purchase of additional fire apparatus, according to reports.

Milwaukee, Wis.—Construction of central fire alarm station at 47th and Vliet streets will be recommended to common council.

Wanted

Fire Apparatus Salesman

Fire apparatus salesman wanted to represent one of the leading manufacturers in Eastern Pennsylvania and Southern New Jersey. Address Box 220, care of FIRE ENGINEERING, 225 West 34th St., New York.
2-5

Value of Quadruple Combination

(*Continued from page* 190)

First: A quad is a good compact piece of reserve apparatus.

Second: It should not be a town's only piece of apparatus, particularly if the ladders are at all likely to be used on an important fire.

Third: A quad can give fair service as any one of its component parts, engine, hose, ladder or chemical truck, and in addition provide its fire department with the distinct advantage of having a little of everything in reserve.

Fourth: A quad cannot fully take the place of two separate companies but it can do better for its city than a single one of either when both are required at a fire.

Fifth: A quad is a piece of apparatus for the moderate sized town that cannot immediately afford both a second pumper and a ladder company and it is one that, when relieved of its double duty by growth of the city (and of its treasury) need not go into the discard—and

Sixth: Believe it or not, in spite of treasury deficiencies and of Underwriters Recommendations that hit the waste basket, the quad is giving many of our cities ladder service that it would never have had any if they'd had to buy a separate truck.

(From a paper read before the annual convention of the Southern California Fire Chiefs' Club, at Catalina Island.)

CONVENTION DATES

March 19—WESTCHESTER COUNTY FIRE CHIEF'S EMERGENCY PLAN. Regular Meeting, Fire Headquarters, Greenwich, Conn. Secretary-Treasurer Lieutenant E. Riviere, Larchmont, N. Y.

April 7-10—FLORIDA STATE FIREMEN'S ASSOCIATION. 5th Annual Convention, Vero Beach, Fla. Secretary, F. C. Pfaender, Winter Haven, Fla. Secretary, Local Convention Committee, E. G. Thatcher, Vero Beach.

April 14-16—SOUTHWESTERN ASSOCIATION OF FIRE CHIEFS. 3rd Annual Convention, Oklahoma City, Okla. Secretary-Treasurer, Chief Tom Lyle, Okmulgee, Okla.

May 12, week of—NATIONAL FIRE PROTECTION ASSOCIATION. 34th Annual Meeting, Atlantic City, N. J. 1931 Convention probably to be held in Toronto, Can. Managing Director, Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

May 14—DEL-MAR-VA. VOLUNTEER FIREMEN'S ASSOCIATION. 1st Annual Convention, Cambridge, Md. Secretary, J. Emory Parks, Cambridge, Md.

May 19-23—KANSAS STATE ASSOCIATION OF FIRE CHIEFS, STATE FIREMEN'S ASSOCIATION and FIRE SCHOOL. Respectively, 14th and 43 Annual Convention and 2nd Annual Fire School Salina, Kan. Secretary, Chief K. D. Doyle, Wamego, Kan. Secretary, Firemen's Short Course Committee, E. J. Stewart, Kansas Insp. Bureau, 701 Jackson St., Topeka, Kan.

June—EASTERN ASSOCIATION OF FIRE CHIEFS. 3rd Annual Convention, Baltimore, Md. (Exact date to be decided later.)

June—MINNESOTA STATE FIRE DEPARTMENT ASSOCIATION. 58th Annual Convention (probably second week in June), Excelsior, Minn. Secretary, Chief Fred Pfaender, New Ulm, Minn.

June 2-4—OKLAHOMA STATE FIREMEN'S ASSOCIATION. 36th Annual Convention, Tulsa, Okla. Secretary-Treasurer, Charles Slemp, 820 East 19th St., Oklahoma City, Okla.

June 2-6—AMERICAN WATER WORKS ASSOCIATION. 50th Annual Convention, Hotel Jefferson, St. Louis, Mo. Secretary, Beekman C. Little, Rochester, N. Y. Offices of the Association, 29 West 39th Street, New York City.

June 4-6—NEW MEXICO STATE FIREMEN'S ASSOCIATION. 8th Annual Convention (Combined with Firemen's Short Course), Deming, N. M. Secretary-Treasurer, Theodore A. Rosenwald, Albuquerque, N. M.

June 9-11—SOUTH CAROLINA STATE FIREMEN'S ASSOCIATION. 25th Annual Convention, Beaufort, S. C. Secretary, R. S. Hood, Sumter, S. C.

June 10-11—MINNESOTA STATE FIRE DEPARTMENT ASSOCIATION. 58th Annual Convention (probably second week in June), Excelsior, Minn. Secretary, Chief Fred Pfaender, New Ulm, Minn.

June 10-12—OHIO FIRE CHIEFS' ASSOCIATION. 13th Annual Convention, Portsmouth, Ohio. Secretary, Chief Philip J. Hardy, Fire Department, Youngstown Sheet and Tube Company.

June 11-13—MARYLAND STATE FIREMEN'S ASSOCIATION. 38th Annual Convention, Lord Baltimore Hotel, Baltimore, Md. Secretary, George R. Lindsay, Hagerstown, Md.

June 13-14—DAUPHIN COUNTY FIREMEN'S ASSOCIATION, 12th Annual Convention, Steelton, Pa.

June 20-21—FOUR COUNTY FIREMEN'S ASSOCIATION. Annual Convention, Easton, Pa.

June 24-27—NEW ENGLAND ASSOCIATION OF FIRE CHIEFS. 8th Annual Convention, Hotel Berwick, Rutland, Vt. Meetings, Odd Fellows' Hall; Exhibits, Armory. Secretary-Treasurer, Chief John W. O'Hearn, Watertown, Mass.; Chairman, Exhibits, Chief Daniel B. Tierney, Arlington, Mass.; Traffic Manager, George F. Cobb, Boston.

July 8-11—MICHIGAN STATE FIREMEN'S ASSOCIATION. 56th Annual Convention and Fire College, South Haven, Mich. Secretary-Treasurer, H. L. Williams, Ludington, Mich.

July 9-10—DELAWARE VOLUNTEER FIREMEN'S ASSOCIATION. 10th Annual Convention, Georgetown, Sussex County, Del. Secretary, Sam H. Carson, Dover, Del.

July 22-23—WESTERN NEW YORK VOLUNTEER FIREMEN'S ASSOCIATION. 30th Annual Convention, Rochester, N. Y. Secretary, Henry A. Clark, Batavia, N. Y.

July 29-31—INDIANA FIREMEN'S ASSOCIATION. 13th Annual Convention, Lafayette, Ind. Secretary, Clem Smith, Fire Headquarters, Terre Haute, Ind.

July 31-Aug. 1-2—CALIFORNIA STATE FIREMEN'S ASSOCIATION. 9th Annual Convention, San Francisco, Cal. Secretary-Treasurer, H. E. Strasser, 1171 Tenth Street, San Diego, Cal.

August—UTAH STATE FIREMEN'S ASSOCIATION. 23rd Annual Convention, Provo City, Utah. (Exact date to be decided later.) Secretary, Charles A. Canning, Midvale, Utah.

Aug. 6-8—WASHINGTON STATE FIREMEN'S ASSOCIATION. 8th Annual Convention, Kelso, Wash. Secretary, H. S. Jenkins, Bellingham, Wash.

Aug. 19-22—FIREMEN'S ASSOCIATION OF THE STATE OF NEW YORK. 58th Annual Convention, Nyack, N. Y. Secretary, Fred A. Davis, Drawer X, Fort Edward, N. Y.

Aug. 26-29—PACIFIC COAST ASSOCIATION OF FIRE CHIEFS. 37th Annual Convention, Oakland, Cal. Secretary, Jay W. Stevens, 343 Sansome St., San Francisco, Cal.

Aug. 27-29—VIRGINIA STATE FIREMEN'S ASSOCIATION. 44th Annual Convention, Phoebus, Va. Secretary, E. K. Landis, Pulaski, Va.

Sept. 2-4—KENTUCKY FIREMEN'S ASSOCIATION. 11th Annual Convention, Paducah, Ky. Secretary, Capt. S. G. Render, 940 Starks Bldg., Louisville, Ky.

Sept. 2-5—DOMINION ASSOCIATION OF FIRE CHIEFS. 22nd Annual Convention, Port Arthur, Ont. Secretary, Chief James Armstrong, Kingston, Ont., Can.

Sept. 9-11—ILLINOIS FIREMEN'S ASSOCIATION. 43rd Annual Convention, Peoria, Ill. Secretary, Assistant Chief Roy W. Alsip, Fire Department, Champaign, Ill. Exhibits, Chief Albert Herring, Fire Department, Murphysboro, Ill.

Sept. 9-12—INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. 58th Annual Convention, Hotel Royal Alexandra, Winnipeg, Man., Canada. Recording Secretary, Chief James J. Mulcahey, Yonkers, N. Y.; Executive Secretary, Jay W. Stevens, 1014 Merchants' Exchange Bldg., San Francisco, Cal.; Chairman, Exhibit Committee, Chief Charles Alt, Fire Headquarters, St. Louis, Mo.

Sept. 16-17—IOWA FIREMEN'S ASOCIATION. 53rd Annual Convention, Boone, Ia. Secretary, Paul Soener, Independence, Ia.

Sept. 24-25—MISSOURI STATE FIREMEN'S ASSOCIATION. Annual Convention, Trenton, Mo. Secretary-Treasurer, M. J. Mulvoy, 3500 S. Grand Boulevard, St. Louis.

Oct. 7-9—FIREMEN'S ASSOCIATION OF THE STATE OF PENNSYLVANIA. 51st Annual Convention, Hotel Americus, Allentown, Pa. Secretary, Charles E. Clark, 411 Bellevue Avenue, Wayne, Pa.

Oct. 21-23—NEBRASKA STATE VOLUNTEER FIREMEN'S ASSOCIATION. 49th Annual Convention (2d in year), Scottsbluff, Neb. Secretary-Treasurer, H. A. Webbert, Kearney, Neb.

Aid Called to Fight Whitman, Mass., Fire—Damage of $150,000 was caused by a fire which destroyed a three-story brick building in Whitman, Mass. Aid was summoned from Abingdon, Rockland and Brockton. Firemen suffered severely from the bitterly cold weather that prevailed.

El Paso, Tex., to Erect Two Fire Houses—Plans are being made for the erection of two fire stations in El Paso, Tex. One house will be two stories high and will cost $22,000. The other will cost $9,500 and will be one story high.

Southern Chiefs Endorse Standardization—In line with recommendations made by Chief E. F. Coop of Pasadena at a meeting of the Southern California Fire Chiefs Club, committees were appointed to arrange the standardization of fire hose couplings in the state and for the tabulation of fire fighting equipment available in the oil district.

Newton, Mass., Has New Fire Alarm System—A new fire alarm system has been placed in service in Newton, Mass. The building was erected at a cost of $72,000; electrical equipment, $70,000; outside cable work, almost $100,000, so that the total cost of the system is about $300,000. The building is two stories high, constructed of brick with limestone trimmings. Mutual aid equipment installed receives fire alarm signals from Boston, Brookline, Watertown, Waltham, Wellesley and Needham.

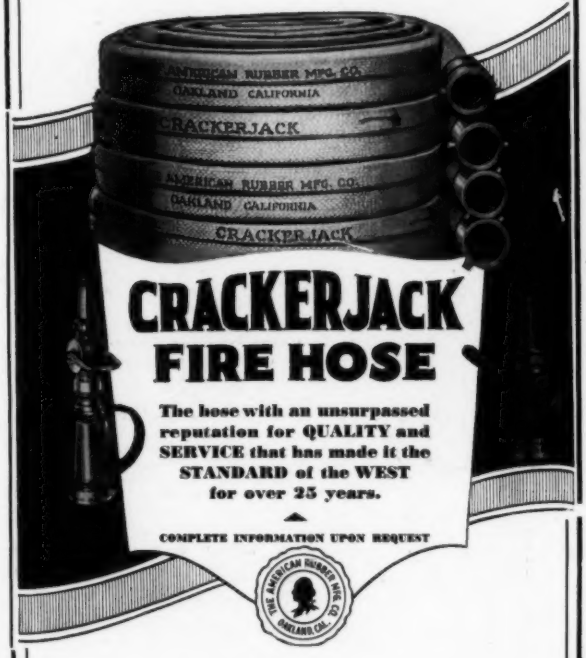
What You'll Like About the WATEROUS ROTARY PUMP

Its freedom from vibration; absence of noise; long wearing qualities; accessibility; efficiency; high capacity per pound of pump weight. And for these reasons, plus others, the Waterous is dependable . . . anywhere . . . under trying conditions . . . at all times. Send for detailed information.

Waterous Dependable

WATEROUS COMPANY

ST. PAUL, MINNESOTA



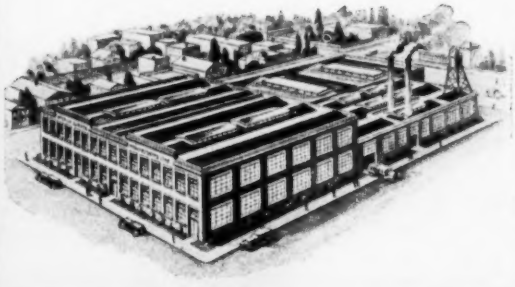
CRACKERJACK FIRE HOSE

The hose with an unsurpassed reputation for QUALITY and SERVICE that has made it the STANDARD of the WEST for over 25 years.

COMPLETE INFORMATION UPON REQUEST

THE AMERICAN RUBBER MFG. CO. OAKLAND, CAL.

WRITE FOR THE **Crackerjack Fire Ax** MADE OF RUBBER
A Dandy for the Kiddies



THE AMERICAN RUBBER MANUFACTURING CO.

Factories and General Offices
OAKLAND, CALIFORNIA

Sales Offices

San Francisco Matson Bldg.	Portland, Ore. 602 Bedell Bldg.
Los Angeles 458 So. Spring St.	Kansas City, Kansas 5547 Lydia St.
Boise, Ida. P. O. Box 1432	Salt Lake City, Utah 149 W. Second So. St.

Spokane, Wash.
112 So. Monroe St.

Minimize Water Damage · *Reduce* Insurance Rates

Shuredry Waterproofed Salvage Covers

City of Charleston
WEST VIRGINIA

Nov. 15, 1929

Fulton Bag & Cotton Mills.
Atlanta, Ga.

Gentlemen:-

The "SHUREDRY" salvage covers I purchased from you some time ago are doing just what you recommended them to do. They have paid for themselves several times in reducing the water damage.

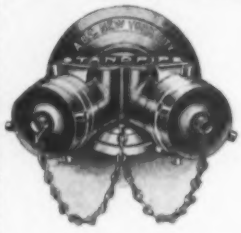
I believe they are one of the most important things in a department with the largest saving, and the smallest purchase cost.

Very truly yours,

Write for Samples and Prices

Fulton Bag & Cotton Mills

St. Louis Atlanta Dallas
Minneapolis Brooklyn New Orleans Kansas City, Kan.



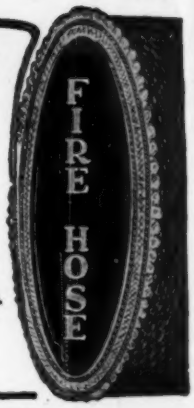
A. B. C. Siamese and Refrigerator Plant Fittings for Fire

A. B. C.
FIRE PREVENTION
MANUFACTURING CO.
390-2 Hudson St., New York

Baker Fabric

Wound with a woven-in strand which runs back and forth from rubber lining to outer surface. This yields a pliability which prevents all buckling at the folds. Write for details.

MANUFACTURED EXCLUSIVELY BY
HEWITT - GUTTA PERCHA
RUBBER CORPORATION
BUFFALO, N. Y.
(Also makers of single and double jacket hose)
"Territories Available"



RENSSELAER "COREY" FIRE HYDRANTS

The **Corey** Fire Hydrants as built by us are the only **Genuine Corey Fire Hydrants** manufactured, and they conform to the standard specifications of the American Water Works Association.

Ask for Catalogue

RENSSELAER VALVE CO.,
TROY, N. Y.

EDDY Fire Hydrants

Are given preference by so many fire protection and water works men because they know that more than half a century of experience go into their manufacture and they embody valuable and exclusive features.

Write for the Facts

EDDY VALVE CO.
Waterford, N. Y.
James B. Clow & Sons, Chicago Agents

JACOB REED'S SONS

Founded 1824 by Jacob Reed

FIREMEN'S UNIFORMS

Thoroughly tailored of especially selected fabrics. Uniforms that look well, wear well and that will give entirely satisfactory service.

Reed's Uniforms are most economical because they represent full value for the amount expended.

Write for catalog and prices.

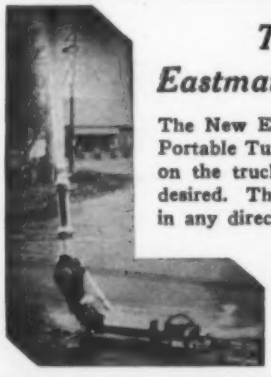
1424-1426 Chestnut St., Philadelphia, Pa.

The High Efficiency of HALE Rotary Pumps is due to:

1 The form of the patented Rotor Tooth.
2 Automatic Packing.
3 Four bearing pump shafts.
4 Stainless steel pump shafts.

The design of Hale pumps has been perfected through fifteen years of active experience, and has resulted in a rugged, highly efficient product.

HALE FIRE PUMP CO., INC.
CONSHOHOCKEN, PA.
Manufacturers of Rotary Fire Pumps.



The New Eastman Deluge Gun

The New Eastman Deluge Gun is a Portable Turret Pipe that can be used on the truck or ground, as may be desired. The stream can be operated in any direction by one man.

Samuel Eastman Co.
Concord, N. H.

"COOPER ELECTRO-PNEUMATIC ALARM"

In use for Years

Unlimited life

Nothing to get out of order

Powerful — Reliable — Instantaneous

Operates on only 1/10 amount of air required by whistles. Quickest device for coding. May be connected to present system and will operate if power is temporarily off. Produces a powerful and distinct sound, audible for miles.

Manufactured by
CLARK COOPER
153-159 Jefferson St. PHILADELPHIA

The Round Table

(*Continued from page* 192)

emergency purposes in case our regular system is not in working order.

Jethro Gibbs, Chief, Montclair, N. J.: Operator at central fire headquarters receives all fire alarm calls. If in his judgment one company can handle the fire, a still alarm assignment is reported as responding, such company being the nearest one to the scene of the fire reported. The operator then assigns other companies to fill in for the company out of quarters.

If more than one company is needed, a box alarm is transmitted from central station and the nearest company notified by direct wire as to location of the fire.

Daniel F. Sennott, Chief, Boston, Mass.: On receipt of a still alarm between the hours of 6 p. m. and 11 p. m. the fire alarm operator, after obtaining the necessary information replies: "We will send apparatus, but please pull the nearest fire alarm box." Should such an alarm be received between the hours of 11 p.m. and 7 a.m. the operator in charge sends a still alarm assignment of apparatus, and then transmits the nearest box. Also during these hours, after an automatic or A. D. T. alarm has been struck, the nearest box is transmitted. This rule may be modified by the operator in charge under extraordinary conditions.

Apparatus consisting of one engine and one ladder company together with the district chief in whose district fire occurs, respond on still alarms.

E. C. Haskin, Fire Marshal, Highland Park, Ill.: All still alarms come in over the fire department line, both central and sub-station being inter-connected. The location of a still alarm upon being received by the main station is repeated back to the sub-station for verification same. Due to the stations being inter-connected, the movements of each are at all times known. If a company from headquarters station is ordered out, apparatus from a sub-station moves up to cover the high value district.

John A. Grogg, Chief, Tiffin, Ohio: Our department is a small one, but two houses being employed to accomodate our apparatus.

Telephone or still alarms are handled by use of the transmitter (where two companies are to respond), call of nearest box to location of fire being employed. If fire is in district covered by Station No. 2 and but one company is to respond, the telephone is employed in calling this station.

John J. Maloney, Chief, Haverstraw, N. Y.: Telephone or still alarms are responded to by the company receiving same. If additional companies are required, a call is sent out to secure them. Alarms received from central stations are handled in the same manner as those from a regular fire alarm box.

J. C. Pierce, Chief, Woodstock, Ill.: Being a volunteer department, it is necessary for us to respond with our apparatus and whatever men are available upon receipt of a phone or still alarm. If a regular alarm is to be sounded, our siren which is located at the municipal power plant is blown.

H. R. McMillan, Chief, Jacksonville, Fla.: All telephone alarms received at headquarters are transmitted to companies covering district from which the alarm is received. The private fire department telephone system is employed for this purpose.

Still alarms are answered by the company receiving it, companies are required to report such action to headquarters before proceeding to respond.

W. A. Buel, Chief, Parsons, Kans.: All alarms are promptly answered, regardless of the manner in which they are received. Alarms received by telephone or via the fire alarm system are transmitted to the proper companies for response. Still alarms are always answered by the company receiving same.

Geo. A. Philbrook, Chief, Middleboro, Mass.: If the telephone or still alarm is for a district within the area of the water system, the house officer and one piece of apparatus respond. Should the call come from outside the water system area, a squad call is sounded, and full crew with one piece of apparatus responds.

Answer to Previous Question

Edward F. McGurn, Drillmaster, Fire Dept., Chicago, Ill.: I do consider Pompier ladder drills and work necessary. The Pompier drills and exercises as practiced at our drill school brings out at once the agility, suppleness and strength of the probationary fireman. Moreover, it helps him to quickly overcome any fear that he may have of working off the ground and to off-set the mental danger of working in high or precarious positions.

All members of our department have received instruction and training in the proper use of Pompier ladders and are expected to use these ladders at any time that they may be used to advantage in rescuing persons in danger.

Back in 1893, I assisted in the rescue of a young man from the ledge of a window, where it was impossible to reach him in time with any other kind of ladder. Just recently our department rescued a number of persons from the window ledge of an eight story building by the use of Pompier ladders in connection with the aerial ladder of a truck.

One or two Pompier ladders should be included in the equipment of each hook and ladder truck of every fire department. All officers and members should be familiar with the use of these ladders. The saving of one life, or even saving one person from serious injury by the use of a Pompier ladder, justifies carrying them on apparatus at all times.

Ship Sinks from Explosion

(*Continued from page* 186)

Eight fire fighters were partially overcome in the attack, but these were carried ashore and revived by Dr. Archer and members of Rescue Co. No. 1. McElligott and his men pushed on and on until they won. It was a battle fraught with danger, as nobody was entirely satisfied that there would not be additional explosions. At 6:15 in the morning, the fire was officially declared "out" and most of the fire companies were sent back—a few remaining to do some overhauling, after Chiefs McElligott, Gebhardt and Rossbach had concluded their explorations of the interior of the vessel as far as one could go without having to swim within the ship.

A total of 15,619,136 gallons of water were thrown on the fire or the ship, of which 8,073,396 were salt water.

Fire Marshal Thomas P. Brophy, following an examination of several witnesses, gives "spontaneous combustion" as the cause of the fire. Officials of the North German Lloyd do not agree with this and declare the cargo was non combustible.

The general manager of the line declared that what was reported as nitrate of potash was actually potassium carbonate, a harmless ordinary potash used for fertilizing, and further, that the shellac was non-inflammable. Included in the cargo were thousands of canary birds. Most of them perished from smoke. Two dogs survived the ordeal.

I. A. F. C. Officers Visit Fire

The day following the fire, officers and directors of the International Association of Fire Chiefs, who were meeting in New York making pre-convention plans for Winnipeg next summer, visited the ship in company with Thomas F. Dougherty, Assistant Chief of Department, and spent nearly an hour going over the vessel and observing the wreckage. Chief Ralph Scott, of Los Angeles, who is president of the association, expressed his compliments to the officers and members of the New York Department for having done as well as they did under such extraordinary circumstances. He told newspaper reporters on the scene that it again proves that a building or a ship are only as fireproof as their contents.

The fire provoked considerable editorial comment and observation by newspapers throughout the shipping and seaport sections of the country, with respect to the character of cargoes in passenger ships.

Another visitor to the ship a week after the fire was C. Hayward Murphy, one of the Commissioners of the Detroit Fire Department. Mr. Murphy, a former U. S. Naval officer, navigator and marine enthusiast, had been a passenger on the "Muenchen" a few years ago, and he was profoundly moved by the sight. He spent nearly an hour on the hulk observing divers going down and coming up with reports of their findings of conditions below the water line. Commissioner Murphy's observations were (and he speaks with authority on such matters) that the "Muenchen" had such a rent in her hull and probably was otherwise so seriously injured by the explosions as to make her future use very doubtful. He called upon Deputy Chief McElligott and complimented him on his handling of a difficult job.

FALSE ALARMS

Drawing by "Art" Espey

A Hazardous Risk

CHEMICAL POLITICS

A coaching course was established for those who wished to compete for a vacancy in the chemical division of the fire prevention department. The subject of nitrogen was being considered.

"Mr. Smith," the instructor asked after a written test, "what makes you so sure that nitrogen is foreign to Ireland?"

"Because, sir, the textbooks distinctly state that nitrogen is not found in the free state."

"So you had a surprise party at your house last night?"

"Yes, my wife came back unexpectedly."

PREPARED

As a witness to the accident when a ladder truck crashed into a car, he was being questioned by the judge.

"How far were you from this spot when the cars in question collided?"

"Eighteen feet and ten inches," remarked the witness.

"How do you know it was exactly that distance?"

"Because I measured it, thinking some fool might ask me the distance."

Walking the plank was really the first blindfold test.

FACIAL EVIDENCE

After waiting until the chief was in exceptionally good humor, a fireman went up to him and broke the news of an impending marriage.

"Humph! How long do you want to be away on your honeymoon?"

The fireman didn't know what to reply:

"Well, how long would you say, sir?"

"How do I know?" replied the chief. "I haven't seen the bride."

JUST FOR FUN

Bill was one of those unfortunates who had to be at the station Christmas eve. In order to retain the holiday spirit, he hung up his socks before he went to bed. When the story was told to the lieutenant, the officer asked:

"What did he get?"

"Two days later he got a notice from the health department."

Looking at elephants, we would say that peanuts are fattening.

EAGER TO GO

The department's mechanic was looking over a second hand car that the city was thinking of buying for the chief. The salesman gave a demonstration.

"What makes it jerk so when you first put it in gear?" asked the mechanic.

Nothing could stump the salesman.

"That goes to prove that it is a real car—it's anxious to start."

Our janitor doesn't keep up with the times. He's still keeping cool with Coolidge.

TWO EVILS

In appreciation of the city's support in buying uniforms, the fire department gave concerts on the Common during the summer months. At that time there were many visitors to the city. While one number was being played, a visitor asked:

"What is that they are playing?"

"I don't know," replied the neighbor, "but it must be something very, very fine, for it isn't pretty."

And then there is the Scot who ate so many apples a day he had to call for the doctor.

FULLY DEVELOPED

The drill master was lecturing to a group of rookies in the drill yard:

"Now remember, practice in Pompier ladder work is designed to develop clear thinking and independence. Now you first four men take your ladders, get up there and do as I tell you?"

ALL SOUND

The fire was out of control. Part of the floor gave in and a beam landed on Pete, and it was time out for him. He was carried out and one fireman was assigned to watch over him. Finally Pete looked up and began sounding his anatomy.

"Anything broken?"

"I thought I had broken my nose," said Pete, "but it's still running."

She reminds me of an almond bar—sweet, but nutty.

Drawing by "Art" Espey

At Any Rate, They Were Sound Sleepers

Firemen had gathered at a certain hotel for their convention. One delegate, who remained in bed because of a splitting headache, heard two maids in conversation in the hall.

"I never saw such a bunch of bums in my life. This morning I found one fellow asleep under the bed and another snoring in the bathtub."

To this the other asked:

"Were they visiting firemen?"

The first chambermaid answered, "No, I think they were Irish."

MATHEWS

(Reg. U. S. Pat. Off.)

FIRE HYDRANTS

for

DOMESTIC

and

HIGH PRESSURE Service

NOTE—

The positive waste value.

All operating threads are dry, being above the stuffing-box.

No toggles, no small, quick-wearing parts.

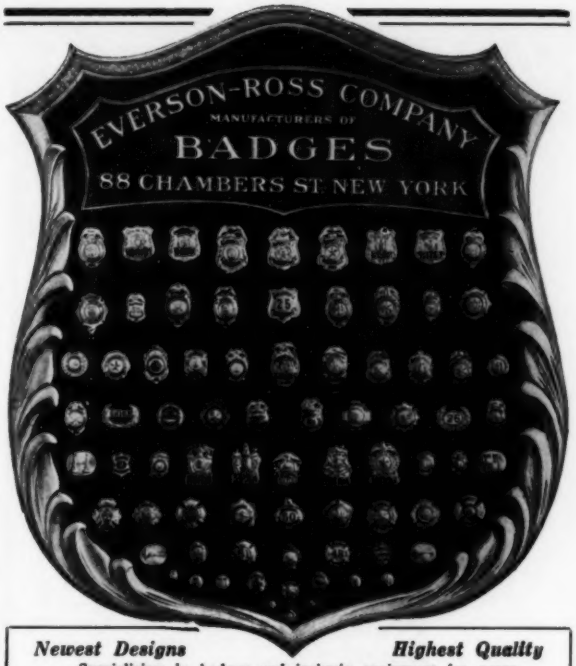
All moving parts are bronze or bronze-bushed.

The outside casing permits replacing a two-way standpipe with a steamer and two-way standpipe without digging up the ground.

An easily installed EXTENSION SECTION readily adapts them to new grade.

VALVES and BOXES
CAST IRON PIPE
Sand-Cast or "Sand-Spun"
FITTINGS

R. D. WOOD & CO., Phila., Pa.



Newest Designs ***Highest Quality***

Specializing in badges and insignia equipment for every fire department need, the EVERSON-ROSS line, known for its fine quality of materials and workmanship, offers a large, up-to-date selection to suit the most discriminating taste. Before you buy—

Write for our Fire Department Badge Catalog No. 32.

EVERSON-ROSS CO.
88 Chambers Street, New York

The Clark Oxygen Carbon Dioxide Inhalator

THE Clark Inhalator is specially adapted for administering the new and more effective treatment of asphyxia, using both 7% and 5% Carbon Dioxide in Oxygen.

Results are what you seek and this new treatment gives you results. Not all inhalators are suitable for use with this advanced method of treatment. That's why you want a "Clark" for your Department.

Full details about this improved treatment sent on request.

McDonald Engineering Corp.
220 Varet Street Brooklyn, N. Y.

BRAXMAR BADGES

Standard for Fifty Years

1879 1929

No. 462-F

	One	More Than One
Gold Filled	$5.00	$4.50
Silver	4.50	4.00
Gold Plate	1.50	1.25
Nickel	1.00	.75

C. G. BRAXMAR CO.
242 West 55th St., New York

BODY GUARD

FIRE FIGHTERS CLOTHING

GIVES real protection and comfort in any weather and at any kind of fire. Designed to permit freedom of action, eliminating cumbersome excess weight. Made of materials that withstand the hardest kind of usage. Bodyguard apparel is used by Firemen everywhere.

BODY-GUARD BRAND

THE BODY GUARD MANUFACTURING CO.
ST. JOSEPH - - MISSOURI

One big whistle with 1930 improvements throwing the sound equally in all directions.

THE BEST MADE, we leave it up to you, your engineers or any good mechanic, and a test.

The decision will unquestionably be the ERICK, designed for the purpose.

For further information address

Erick Electric Siren Co.
State & Fillmore Ave.
St. Paul, Minn.

Hedberg Super Sirens

"The World's Best by Test"

offer the world's greatest and most versatile range of choice involving sizes and methods of operation.

Write for descriptive matter showing sirens that have never lost in competition.

J. N. HEDBERG

321-49 W. REED ST.,

SAN JOSE - - - CALIFORNIA

Clifton Salvage Covers

Are made of strong, heavy duck and lapped seams and are designed of such thickness and weight as to be light enough to be handled quickly and rigid enough for the most strenuous service. They are rubberized on both sides with a double coating of a high grade, long life, rubber compound.

CLIFTON SALVAGE COVERS are built to stand the heaviest abuse and are used by many of the large Protective Departments.

May we send you further particulars?

Clifton Manufacturing Company

Jamaica Plain District :: Boston, Mass.

Quick-Acting Reliable

Anderson-Hale Improved

FIRE STATION DOOR OPENERS

Over 1,300 sets of Anderson-Hale Fire Station Door Openers are in successful use. They provide simple, durable, quick-acting doors that open inward. No obstruction to sidewalk. Attractive in appearance, cannot sag, closes tight, excludes cold, gives clear opening. Opens from driver's seat or from floor. Many repeat orders from users.

Write for complete information.

The Anderson Coupling & Fire Supply Co.

Mfrs. Motor Fire Equipment and Fire Supplies

Kansas City, Kansas

Novo Acid Jars & Holders

of every description stronger than lead and non-corrosive. Used by departments throughout the country.

Chemical Tanks and Lally Quick Opening and Self-packing Top for Chemical Tanks

Lally Improved Fire Hose Couplings, Fire Extinguishers and Charges, Fire Hose and Fire Department Supplies in General

Send for Complete Catalog

LALLY FIRE APPLIANCE CO.

Wilmington Brass Co., Wilmington, Del.

BI-LATERAL FIRE HOSE

"IT'S DIFFERENT"

Fire hose of every description, make or kind has to be stored flattened ninety-nine percent of the time.
The flattening of Bi-Lateral Hose curves the rubber in the space that is free from the jacket.
Hose manufactured the old way compresses and creases the rubber when it is flattened.

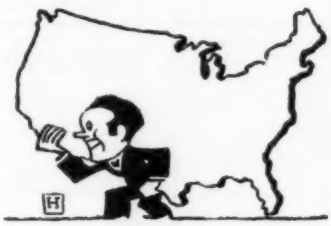
"THAT'S THE DIFFERENCE"

BI-LATERAL FIRE HOSE CO.
110 North Franklin Street
Chicago, Ill.

Your Catalog Page

Fire Protection Equipment and Supplies

1 Acid Siphons.
2 Adaptors for Changing Hydrant Threads.
3 Acid Jars and Rings.
4 Aerial Ladders, Detachable.
5 Aerial Trucks.
6 Alarms, Siren, Electric.
7 Alarm Systems, Industrial.
8 Alarm Systems, Municipal Telegraphic.
9 Alarms, Thermostatic.
10 Asbestos Clothing.
11 Badges, Insignias, Buttons, etc.
12 Banners, Trumpets, etc.
13 Battery Jars.
14 Battery Zincs for Fire Alarm Batteries.
15 Bells, Fire Alarm, Municipal
16 Body Equipments.
17 Boxes, Gongs, Reels, Registers, Fire Alarm.
18 Brakes, Air.
19 Brake Linings.
20 Brooms, Fire.
21 Building Materials, Fire Retardant.
22 Caps, Firemen's.
23 Chains, Non-Skid Fire Apparatus.
24 Chassis for Fire Apparatus.
25 Chemical Engines and Tanks.
26 Chimney Cleaning Compounds.
27 City Service Trucks.
28 Coats & Suits, Firemen's Quick Hitch.
29 Combination Chemical & Hose Cars.
30 Cutting & Welding Equimpent Blow Torch.
31 Cutting & Welding Equipment, Electric.
32 Deluge Sets.
33 Door Openers, Fire Station, Automatic.
34 Extinguishers, Calcium Chloride.
35 Extinguishers, Carbon Dioxide.
36 Extinguishers, Soda-Acid.
37 Extinguishers, Carbon Tetrachloride.
38 Extinguishers, Foam.
39 Extinguishers, Powder.
40 Fire Boat Nozzle Equipment.
41 Fire Department Supplies, General.
42 Fire Exit Devices, Door Opening.
43 Fire Alarm Posts.
44 Fire Escapes, Portable.
45 Fire Escapes, Rigid.
46 First Aid Equipment.
47 Flare Lights.
48 Flashlights, Hand.
49 Foam Liquid for Extinguishers.
50 Gas Masks and Respirators.
51 Gas & Smoke Helmets.
52 Gasoline & Oil Handling Equipment.
53 Goggles, Firmen's.
54 Helmets, Metal, etc.



Help Yourself!

Whenever you are in the market for new equipment you naturally want to get complete information from all reliable manufacturers before you place the orders for your department.

This page is a feature of every issue to make it convenient for you to get all this information without cost to you and without placing you under any obligation whatever to buy from any particular manufacturer.

You only have to run down the list of equipment and mail in the coupon below with your name and address and the numbers that indicate what you are interested in and we will then have the leading manufacturers of this equipment send you complete information direct—so why not let us help you get what you want? We are glad to be of service. Help yourself.

Fire Protection Equipment and Supplies

55 Hose Carts, Reels & Racks.
56 Hose Clamps.
57 Hose, Fire.
58 Hose, Chemical.
59 Hose Holders.
60 Hose Jackets.
61 Hose Standardization Tools.
62 Hydrant Draining Pumps.
63 Hydrants, Fire.
64 Jacks for Fire Trucks.
65 Jacks, Shoring & Prying.
66 Ladders, Fire.
67 Lightning Arresters.
68 Motorcycles, Fire Dept. Equipped.
69 Nets, Life.
70 Nozzles, Pipes & Misc. Brass Goods.
71 Packings, Pumps.
72 Pads, Pole Hole.
73 Paints, Fire Resisting.
74 Priming Ether, Motor.
75 Pumping Cars, Standard.
76 Pumping Cars, Foam.
77 Pumps, Fire Apparatus.
78 Pumps, Fire Service, Stationary.
79 Pumps, Portable for Fire Protection.
80 Record Books, Fire.
81 Relief Valves.
82 Reviving Apparatus, Oxygen.
83 Rubber Clothing.
84 Searchlights.
85 Shingles, Fire Retardant.
86 Shirts, Firemen's Special.
87 Sirens, Apparatus & Chiefs' Cars.
88 Sliding Poles.
89 Soda & Acid Chemicals.
90 Spark Plugs, Fire Apparatus & Motorcyles.
91 Squad and other Auxiliary Cars.
92 Sprinkler Head Shut-Offs.
93 Sprinkler Supervisory Service.
94 Sprinkler Systems, Automatic, Foam.
95 Sprinkler Systems, Automatic, Water.
96 Starters, Fire Apparatus, Automatic, Air.
97 Steam Fire Engines.
98 Tarpaulins & Fire Blankets.
99 Tetrachloride Chemicals.
100 Thawing Equipment, Hydrant.
101 Tires, Fire Apparatus, Pneumatic, Solid, Cushion and Non-Skid.
102 Tractors.
103 Traffic Clearing Systems.
104 Triple Combination Pumping Cars.
105 Uniforms.
106 Water Towers.
107 Wheels, Cushion.
108 Whistles, Fire Alarm, Compressed Air
109 Whistles, Fire Alarm, Steam.
110 Whistles, Fire Apparatus.
111 Wrecking Trucks.

TEAR OFF HERE

FIRE ENGINEERING, 225 West 34th St., New York City.
As a fire protection official I should like to have descriptive literature and complete information mailed to me, without cost or obligation, on the equipment indicated by the following numbers:

Date.....

Nos. .....

Nos. .....

Nos. .....

Nos. .....

Name .....

Position .....

Street .....

City and State.....

For Information on Any Equipment Not Listed, Write on This Page or Use Separate Sheet 3-5

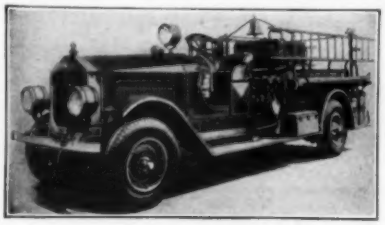
JOHN H. CLAY, INC.

1320 Ridge Ave., Philadelphia, Pa.
Established 1864

Clay Automatic Door Opening Devices for Fire Station Doors Opening either In or Out. Save valuable minutes in getting to fires. Send for Bulletin.

MAXIM FIRE APPARATUS

All Types



All Sizes

If you are thinking of buying new apparatus shortly, be sure to get all the facts about MAXIM before you decide.
Send for complete information

MAXIM MOTOR COMPANY, Middleboro, Mass.
Metropolitan Sales Agents:
The Woodhouse Manufacturing Co., 156 Chambers St., N. Y.

CITY SERVICE HOOK and LADDER APPARATUS

We build both LIGHT and HEAVY HOOK AND LADDER TRUCKS. Equipped with our high grade ladders and miscellaneous equipment. Double Bank type—and very low to ground.

Write us when interested

COMBINATION LADDER CO., INC.
381 Fountain St. Providence, R. I.

when!

You are interested in Fire Fighting Equipment consult:

BOYER

Builders of equipment to meet your requirements.
Specializing in Apparatus for Rural Fire Fighting.

BOYER FIRE APPARATUS COMPANY
Logansport, Indiana

Fire Fighting Equipment

The quality of Pirsch fire fighting equipment is assured by more than seventy years of manufacturing experience. The Pirsch line is complete, chemical engines, ladder trucks, pumpers and Pirsch trussed fire ladders. Write.

PETER PIRSCH & SONS CO.

Factory and Home Office
Kenosha, Wisconsin

Eastern Office
5 Beekman St., New York, N. Y.

MORSE

FIRE BOAT EQUIPMENT
Invincible and Callahan Nozzles

Fire Department Supplies

are in use throughout the country and giving unsurpassed service.

Every fire official should be fully acquainted with Morse equipment and have our catalog and other descriptive literature on file for ready reference whenever considering the purchase of new equipment.

You will find that it pays.

Write for Catalog

Andrew J. Morse & Son, Inc.
221 High St. Established 1837 Boston, Mass.

New Victor Gas and Fume Mask

Better Rubber. Longer Life. Better Fitted. Moulded to Fit the Face. Better Vision. Renewable Lenses. Better Air. Better Work. Low Prices. High Quality.

Over 5,000 Victor Gas Masks in Service
Full Line Fire Dept. Supplies and Equipment
New 43 Edition Catalog on Request

The Woodhouse Mfg. Co., Inc.
156 Chambers St., New York

D. A. Woodhouse, Pres. and Gen. Mgr. George J. Kuss, Vice-Pres. and Treas.

Always ready for instant use.

For Personal Safety use

DONTFEAR

Smoke and Fume Respirators

Positive protection against smoke, fumes and gases.

Price $5, Goggles $1 extra; Canisters 50 cents
Send for catalogue.

Don'tfear Mask Co.
654 Madison Avenue, New York, N. Y.

ADVERTISING INDEX

Advertising Pays—in Fire Engineering

	PAGE
A.B.C. Fire Prevention Mfg. Co.	210
Ahrens-Fox Fire Engine Co.	181
American Fomon Company, Inc.	214
American LaFrance & Foamite Corp.,	*Inside Front Cover*
American Rubber Mfg. Co.	209
Anderson Coupling & Fire Supply Co.	214
B. & M. Siren Mfg. Co.	205
Bi-Lateral Fire Hose Co.	214
Body Guard Mfg. Co.	214
Boyer Fire Apparatus Co.	216
Braxmar Co., C. G.	213
Clark-Cooper Co.	210
Clay, Inc., John H.	216
Clifton Mfg. Co.	214
Combination Ladder Co.	216
Darling Valve & Mfg. Co.	182
Don'tfear Mask Co.	216
Eastman Co., Samuel	210
Eddy Valve Co.	210
Erick Electric Siren Co.	214
Eureka Fire Hose Mfg. Co.	*Front Cover*
Everson Ross Co.	213
Fabric Fire Hose Co.	*Inside Back Cover*
Federal Electric Co.	179
French & Hecht, Inc.	*Back Cover*
Fulton Bag & Cotton Mills	209
Gamewell Company	184
Hahn Motor Truck Co.	205
Hale Fire Pump Co.	210
Hedberg, J. N.	214
Hewitt-Gutta Percha Rubber Corp.	210
Information for Buyers	215
Lally Fire Appliance Co.	214
Larkin Mfg. Co.	206
Mack Trucks, Inc.	183
Maxim Motor Co.	216
Morse & Son, Inc., Andrew J.	216
McDonald Engineering Corp.	213
National Standard Threadless Coupling Corp.	206
Peter Pirsch & Sons Co.	216
Reed's Sons, Jacob	210
Rensselaer Valve Co.	210
Sterling Siren Fire Alarm Co., Inc.	218
Union Water Meter Co.	206
Waterous Company	209
Wausau Fire Hose Protector Co.	206
Wood & Co., R. D.	213
Woodhouse Mfg. Co.	216

Step Out!

You step out into new fields of opportunity by using FIRE ENGINEERING to keep you in touch with the news and developments of your profession.

If not already a subscriber, this blank mailed to 225 W. 34th St., N. Y. C., will start your subscription with the current issue, and within 30 days you can pay $3 for the 26 issues of the year. What say? Please write clearly!

Your Name .....

Position .....

Address .....

A Subscription to Fire Engineering

releases you from confinement in your own department. It brings the Fire Fighting world to you!

At the Fire... No Time Lost

Where a volunteer fire department is used, members must not only know when there is a fire, but must know WHERE the fire is, in order that they may arrive with minimum delay.

The Sterling Code Siren is designed for this particular purpose. By means of its coded signals, members know immediately just where the fire is . . . if reinforcements are needed, they can be summoned by the same method.

The Sterling Code Siren operates manually from test button; semi-automatically by means of a central station transmitter, or direct-automatically from municipal type coded fire box located at convenient points.

The transmitter can be located at any headquarters and all alarms and signals sent out from there by merely placing the code wheel and pulling the lever.

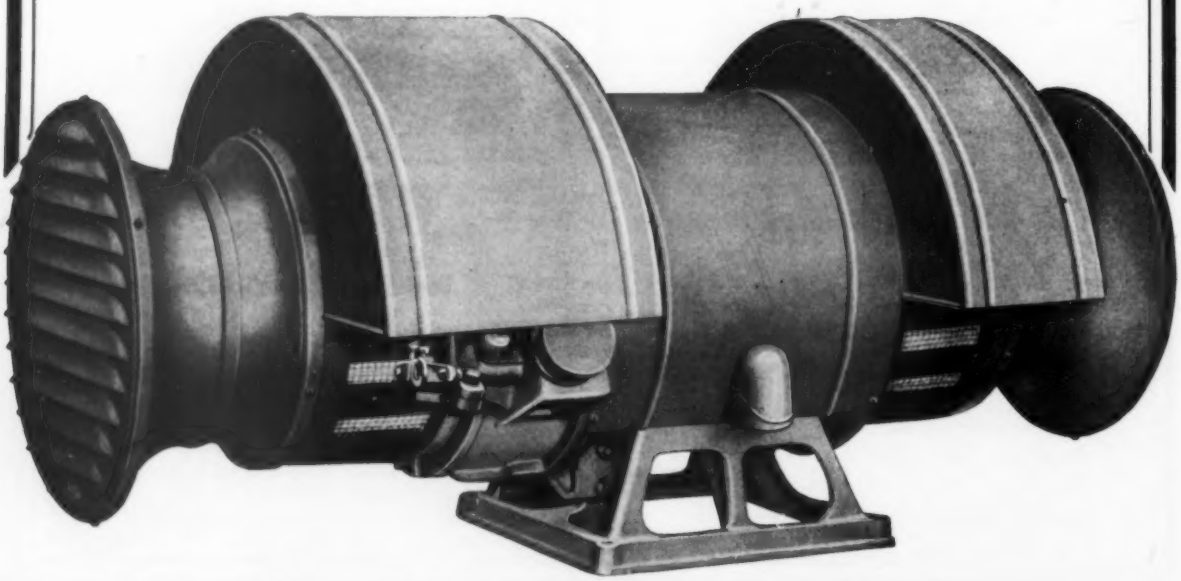
STERLING SIRENS

Sterling Code Siren

Weather - proof . . . powerful . . . it sends clear, distinct signals that save life and property.

Sterling Code Sirens are manufactured by the world's oldest and largest exclusive manufacturer of sirens. Our engineering department is ready to consult with you at any time on your emergency signaling problems. Write:

STERLING SIREN FIRE ALARM CO., Inc.
61 Allen St. Rochester, N. Y.



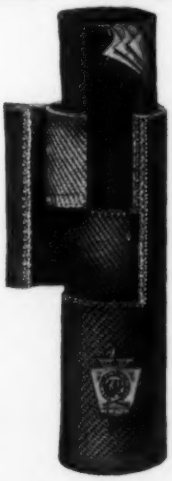
We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers.*

THE LIFE OF YOUR HOSE DEPENDS on the INTEGRITY OF ITS MANUFACTURER

FABRIC

Wax & Para Gum Treated Cotton Rubber Lined

FIRE HOSE



THERE are many points of importance in the manufacture of good fire hose; points that demand care and the greatest skill. Here in our factory among the Connecticut hills are gathered a personnel of capable executives and workmen who's job is to see that you get dollar for dollar value out of Fabric Hose.

The mechanical process used in the manufacture of our hose is a process worthy of note if you buy hose from which you expect *exceptional service.* The threads are wax and para gum treated before they are woven, thereby insuring uniform toughness and absolute resistance to weather and water. *Fabric Hose will not rot — it is mildew-proof — pliable, strong and durable.*

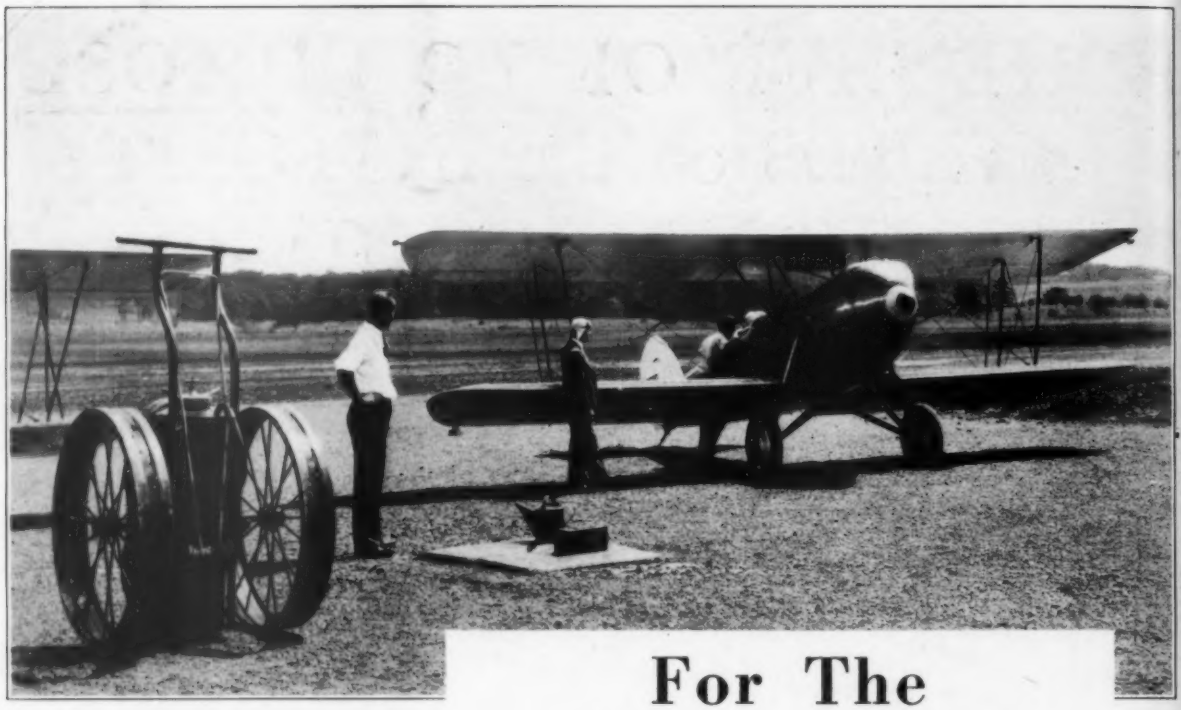
The wonderful acceptance of Fabric Hose by thousands of chiefs over a half century is gratifying evidence of the quality they get out of it. Fabric Hose will continue to be manufactured with sterling integrity. You can recommend and buy it with that thought in mind. *Write for our booklet* "Fire Hose and How It Is Made."

FABRIC FIRE HOSE CO.

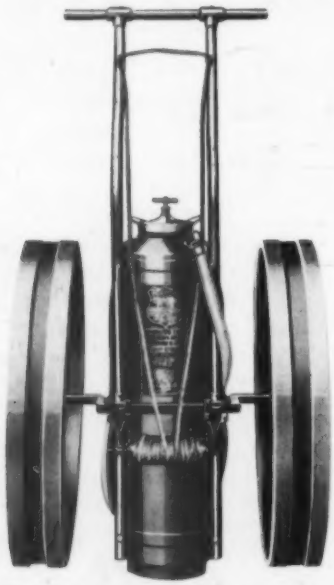
9-15 Park Place, New York, N. Y.

124-126 W. Lake Street, Chicago, Ill.

Atlanta, Boston, Columbus, Dallas, Binghamton, Baltimore, Minneapolis, Portland (Ore.), San Francisco, Los Angeles, Newark, Pittsburgh



For The Flying Field



Extreme accuracy in construction of wheels and bearings reduces draft and makes for quicker and easier handling of light or heavy engines.

The Foamite extinguisher is at home wherever fire hazard lurks. And there is a type designed to meet every condition, outdoors as well as indoors, most effectively.

Even to the wheels, this equipment is built to the most exacting requirements. The French & Hecht Steel Wheels used are specially designed for these engines. Correct width of tire, trueness of wheel and accurate workmanship from hub construction to the tire, are important features of these wheels.

French & Hecht is a distinct type of steel wheel. The method of fastening spokes to hub and tire is a highly developed process which assures maximum strength and rigidity in the wheel. Because of this construction these wheels withstand the hardest usage and are practically permanent.

FRENCH & HECHT, INC.

Davenport, Ohio **Springfield, Ohio**

Wheel Builders Since 1888

FRENCH & HECHT

STEEL WHEELS